NETWORK WORLD

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SNA gateway vendors seek SNMP mgmt.

By Maureen Molloy
Senior Writer

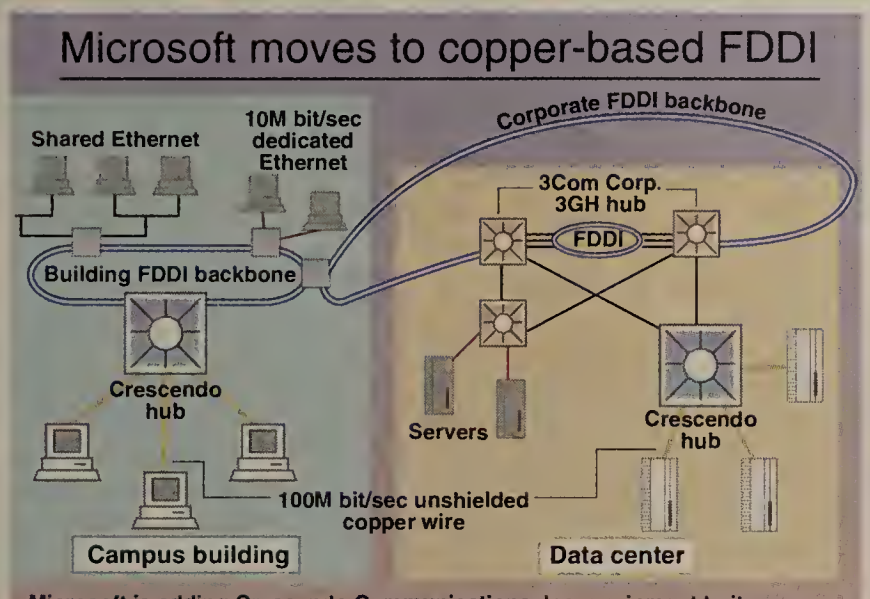
SAN FRANCISCO — Ten SNA gateway vendors are banding together to create a common Management Information Base (MIB) that will enable their products to be managed from a central SNMP console.

IBM said at INTEROP 92 Fall last week that it may join the effort aimed at giving users improved control over gateways, which link local-area network-attached personal computers to Systems Network Architecture hosts.

SNA gateways must typically be managed by on-site administrators because only rudimentary monitoring functions are available from centralized management tools such as IBM's NetView.

The vendors vowing to support the MIB initiative include Attachmate Corp., Data House Information Systems, Digital Communications Associates, Inc., Eicon Technology Corp., Harris Adacom Corp., Network Software Associates, Inc., Novell, Inc., Ori-

(continued on page 62)



Microsoft is adding Crescendo Communications, Inc. equipment to its corporate LAN to extend 100M bit/sec links to some desktops and servers over unshielded twisted pair.

GRAPHIC BY SUSAN SLATER | SOURCE: MICROSOFT CORP., REDMOND, WASH.

Microsoft throws weight behind FDDI over copper

By Bob Brown
Senior Editor

REDMOND, Wash. — Trying to keep ahead of the bandwidth needs of end users, Microsoft Corp. announced last week it will use emerging FDDI-over-copper technology in its sprawling campus net here to push 100M bit/sec speeds out to the desktop.

The deployment plan, one of boldest to date for Fiber Distributed Data Interface over copper, would offer four times the throughput of the company's existing Ethernets and give software developers higher speed access to corporate data center servers.

"[FDDI over copper] looks as if it will give us the bandwidth our developers are looking for without us having to reinvent our network," said Dave Leinweber, senior manager of Microsoft's corporate network group. Given the company's fast growth rate, the goal is to "implement technologies that are easy to migrate

(continued on page 6)

MCI to take SMDS over the long haul

Carrier pressures rivals to action by becoming first interexchange carrier to announce SMDS.

By Bob Brown
Senior Editor

SAN FRANCISCO — MCI Communications Corp. last week became the first long-haul carrier to announce a Switched Multimegabit Data Service (SMDS) offering, paving the way for SMDS to realize its potential as a high-speed, intercompany data service.

MCI's new VPDS HyperStream service, introduced at INTEROP 92 Fall here, is a packet-switched data offering designed to give users on-demand connectivity at up to 45M bit/sec. It will support features such as group addressing and the ability to establish links with any other SMDS user without having to preassign routing paths.

Analysts said the announcement, which was expected, may pressure MCI's rivals into bringing SMDS offerings to market (*NW,* March 30). Sprint Corp. has articulated plans to run SMDS over its frame relay net, while AT&T and WilTel have been mum.

"VPDS HyperStream takes the next step in the evolutionary process of high-speed networks at MCI," said Tony Russo, MCI's director of strategic marketing initiatives. "Users want connectionless services and don't want to

(continued on page 6)

IBM reveals new facets of APPN plan

By Michael Cooney
Senior Editor

SAN FRANCISCO — IBM last week moved to counter the efforts of rivals in the Advanced Peer-to-Peer Internetworking (APPI) Forum, while revealing an oddity in its own APPN strategy that raised some eyebrows.

At INTEROP 92 Fall here, IBM announced it would publish its Advanced Peer-to-Peer Networking specifications and provide a less expensive way for third parties to license APPN technology.

But the vendor also revealed that its 6611 router will not be capable of handling wide-area APPN routing until late next year at the earliest. The device will support local APPN routing in its second release next year.

Supporting native APPN routing across wide-area network links is key to the success of IBM's

(continued on page 63)

NETLINE

NEWSPAPER

Carriers, IBM use INTEROP to deliver frame relay plans

By Bob Wallace
Senior Editor

SAN FRANCISCO — Frame relay gained new support last week as domestic and international carriers announced a slew of services and IBM pledged to expand frame relay support in its products.

Among the developments at INTEROP 92 Fall here was the announcement of a new pan-European frame relay network, Pacific Bell's decision to widely deploy a public frame relay service and WilTel's plan to offer frame relay support services.

"Frame relay has come a long way in a short time," said Daniel Briere, president of TeleChoice, Inc., a Montclair, N.J., consultancy. "Carriers are extending the reach of the service and doing everything they can to make it easier to use."

A case in point is Unisource Business Networks, a Frankfurt, Germany-based joint venture formed last year by two post, telegraph and telephone administrations, PTT Telecom Nederland BV and Sweden's Televerket.

Unisource last week detailed plans to build a pan-European frame relay net based on Sprint Corp.'s TP4900 cell relay switch, the same platform Sprint uses to deliver frame relay in the U.S.

(continued on page 62)

Windows for Workgroups gets mixed initial reviews

Peer-to-peer net tool will help small groups but requires 386 platform and has other limitations.

By Caryn Gillooly
Senior Editor

NEW YORK — With music and dancing in what looked more like an off-Broadway show here than a product announcement, Microsoft Corp. last week finally unveiled Windows for Workgroups — the long-anticipated version of Windows that gives users peer-to-peer networking capabilities.

Officially called Windows for Workgroups Operating System Version 3.1, the new product lets users share files and printers without using a network server.

Despite all the song and dance, analysts do not expect Windows for Workgroups to take the market by storm. "This will appeal to a particular segment of the market — those that are committed to Windows but do not see networking growing beyond the department level," said Peter Kastner, vice-president at Aberdeen Group, Inc., a research and consulting house based in Boston.

The product, according to Microsoft, is simply a version of Windows with peer networking capabilties and other networking features built-in. But analysts are classifying it more as a Windows-

(continued on page 61)

3Com adds new hub to growing token-ring line

Positions device for future ATM capabilities.

By Skip MacAskill
Staff Writer

SAN FRANCISCO — Using INTEROP 92 Fall as a backdrop, 3Com Corp. last week unveiled its first token-ring hub, a device with a 2.6G-bit backplane that promises future support of Asynchronous Transfer Mode (ATM).

The new LinkBuilder MultiServices Hub (MSH), which builds on the token-ring splash 3Com made in September when it rolled out its first token-ring bridge/routers and workstation interfaces, offers a separate backplane for token-ring and Ethernet local-area networks.

Ultimately, it will also support the Fiber Distributed Data Interface and ATM.

"The scalable, high-speed backplane architecture of the MSH is capable of supporting any serial network technology, such as Ethernet, token ring and FDDI, as well as emerging technologies," said John Boyle, director of marketing for the Santa Clara, Calif.-based company.

The 11-slot modular hub comes equipped with two physical backplanes: a 30M bit/sec bus, which can support as many as three Ethernet LANs, and a

(continued on page 63)

Cisco details 3-phase ATM plan for router offerings

By Maureen Molloy
Senior Writer

SAN FRANCISCO — Following the lead of a spate of hub and other internetworking vendors, Cisco Systems, Inc. last week announced at INTEROP 92 Fall plans to support Asynchronous Transfer Mode (ATM) technology on its line of bridge/routers.

Cisco's strategy, which will be implemented in three phases over the next two years, includes the development of a wide-area ATM interface for its routers.

Cisco Chief Executive Officer John Morgridge said his company is committed to ATM and views it as a key internetworking technology for the next decade. But it is still too early to know precisely how ATM will be deployed, he said, since there remains a raft of ATM interoperability issues to be resolved. These include ATM addressing, adaptation-layer algorithms, protocol multiplexing and signaling.

"In all of the Holy Grail products, the less known about them, the more holy they are, and certainly ATM falls into that category," Morgridge said.

Under Phase 1 of Cisco's ATM plan, which has already been

(continued on page 61)

Briefs

SNMP for APPN. IBM announced last week it will publish a Management Information Base (MIB) for managing Advanced Peer-to-Peer Networking (APPN) resources via Simple Network Management Protocol-based management systems. The MIB is expected to be available in March 1993.

NSFNET contract expires. The five-year agreement under which Merit, Inc. provided the National Science Foundation Network (NSFNET) with backbone T-3 services expired last week without a new agreement being finalized. Merit, the Ann Arbor, Mich., university consortium that has partnered with MCI Communications Corp. and IBM under the name Advanced Network & Services, Inc., expects to soon complete negotiations with the NSF on an anticipated 18-month extension. Merit said it will continue to deliver service on a good-faith basis in the interim.

FCC's Sikes undergoes surgery. Federal Communications Commission Chairman Alfred Sikes underwent surprise surgery for prostate cancer here last week, but agency officials said his chances for complete recovery are good. Sikes said through a spokesman that he will be recuperating for several weeks but plans to return to the agency. It was not clear how his temporary absence might affect pending decisions, including whether to push back the deadline for 800 portability. FCC decisions require approval by only three commissioners, but the remaining four might prefer to wait until Sikes returns, particularly on controversial decisions.

Desktop management takes a step foward. The Desktop Management Task Force (DMTF) last week at INTEROP Fall 92 announced it has distributed a draft specification for the Desktop Management Interface (DMI) to its 40 vendor company members. DMI is a proposed standard for facilitating the management of networked and stand-alone desktop computers. A revised document incorporating feedback from group members will be out in January.

Carriers to build transpacific cable system. AT&T and 47 other international carriers last week announced plans to build TPC-5, a $1.12 billion, 15,500-mile self-healing fiber cable linking the mainland U.S. with Hawaii, Guam and Japan. AT&T is the leading investor in TPC-5, with a 35% stake. The cable will come on-line in late 1996 featuring one working fiber pair and a spare fiber pair for backup. Today, service is usually restored on a satellite, which can result in customer communications disruptions of several hours.

Infonet delays frame relay. Infonet Services Corp. last week said it has delayed introduction of its public frame relay service from the end of this year until July 1993. The company said it will first use the frame relay service internally before making it generally available but would not say why its rollout has been postponed.

NCR offers InterSpan management. NCR Corp. last week brought out an application for managing AT&T's InterSpan frame relay service. Dubbed StarSentry Frame Relay Data Manager, the application runs on NCR's Simple Network Management Protocol-based StarSentry management system and provides data on traffic patterns for each InterSpan port and permanent virtual circuit assigned to a user. It will be available this month.

CONTACTS

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CONTENTS

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HP unveils apps for SNA, DECnet, NetWare mgmt.

HP is trying to make OpenView all things to all people, but some apps don't quite measure up.

By Jim Duffy
Senior Editor

SAN FRANCISCO — Looking to make OpenView a more compelling tool for multivendor network and systems management, Hewlett-Packard Co. last week unleashed third-party applications for governing IBM, Digital Equipment Corp. and Novell, Inc. environments.

HP claims it can now manage the three leading network environments, but some of the new applications appear to do little more than allow OpenView to display devices and monitor their operational statuses.

For example, the Systems Network Architecture management application developed by Peregrine Systems, Inc., called OpenSNA, works with OpenView to discover and depict SNA resources on an OpenView console. It also provides real-time status updates without polling.

OpenSNA links OpenView's Network Node Manager application to IBM's VTAM program on MVS hosts via Transmission Control Protocol/Internet Protocol or LU 6.2 sessions.

> OpenSNA works to discover and depict SNA resources on an OpenView console.
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VTAM provides SNA topology, status updates, command and control and message information to Network Node Manager, which discovers network nodes and depicts them on a graphical network map on the OpenView console.

OpenSNA is priced at $20,000 and is available now.

The DECnet applications take management a little farther. Developed by Ki Research, Inc. of Columbia, Md., OpenDNM supports DEC's DECnet and Local Area Transport (LAT) protocols, enabling users to display, configure and control DECnet and LAT nodes from an OpenView console.

OpenDNM can display DECnet and LAT topologies as well as DECnet events. It is used to configure DECnet lines, circuits, nodes, links and LAT servers, ports and sessions. OpenDNM can reduce multicast message transmissions, data retransmissions and the size of routing update messages on DECnet networks. It also gathers network statistics and analyzes protocol behavior.

OpenDNM ranges in price from $12,000 to $36,000. It will be released in December.

For NetWare environments, there is software from Network Computing, Inc. called LANExam

(continued on page 6)

NETWORK WORLD

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ACC looks to drive SNA strategy with acquisition

By Skip MacAskill
Staff Writer

SAN FRANCISCO — In a move that will enhance its position in the SNA-LAN integration market, Advanced Computer Communications (ACC) is expected to announce within the next two weeks that it has acquired Ring Access, Inc., a maker of Synchronous Data Link Control conversion devices, according to sources.

The takeover is seen as a bold response to rival bridge/router vendors who are seeking to address the same integration issue by signing OEM deals with Ring Access' two rivals — Netlink, Inc. and Sync Research.

"Knowing the importance of merging legacy technologies such as IBM SNA into multiprotocol internetworks, ACC decided that the best course of action would be acquisition of Ring Access," said one source close to the company. "With Ring Access, ACC immediately gains the SDLC conversion technology, Ring Access' RA1200 gateway and an installed customer base."

The RA1200 is Ring Access' two-port Synchronous Data Link Control-to-802.2 Logical Link Control 2 SNA gateway that is powered by an IBM chipset and supports serial interfaces, such as RS-232 and V.35.

Ring Access, based in San Carlos, Calif., is ranked third in the SNA connectivity market behind Sync Research and Netlink.

The acquisition of Ring Access is expected to give ACC greater visibility in the SNA market, which has seen a flurry of recent activity, including announcements from Netlink that Proteon, Inc. and Wellfleet Communications, Inc. have agreed to resell its SDLC Link Server line. Sync Research is expected to announce similar deals with 3Com Corp. and Ascom Timeplex, Inc. ("Netlink and Sync Research enhance their SNA gateways," *NW*, Oct. 26).

"ACC's ultimate goal is to marry IBM connectivity with multiprotocol routing so that the mainframe actually becomes part of the LAN and not something that simply hangs off it," the source said. "ACC has all the important pieces to attack that goal, and it didn't have to spend time developing the technology."

Mike Gardner, chief executive officer of ACC, confirmed that the two companies were still pursuing their existing joint marketing agreement but declined further comment.

Ed Green, president of Ring Access, also declined comment on the issue.

Lotus joins competing VIM and MAPI mail APIs

By Timothy O'Brien
West Coast Bureau Chief

SAN FRANCISCO — Lotus Development Corp. last week said it will develop software that allows mail-enabled applications built to the Vendor Independent Messaging specification (VIM) to work with Microsoft Corp.'s Messaging Application Programming Interface (MAPI).

The announcement is good news for users and developers, which had voiced concern about the emergence of the two incompatible electronic mail application program interfaces (API) driven by competing software companies: Microsoft, with MAPI, and the vendors in the VIM consortium — Lotus, IBM, Novell, Inc., Borland International, Inc., Apple Computer, Inc. and WordPerfect Corp.

At a keynote address at the Electronic Mail Association meeting here, Jim Manzi, Lotus chairman and chief executive officer, said his company was responding to user pressure for resolution of the messaging API issue.

"Our customers have been asking for open messaging systems that work together," he said. "We want to make sure developers can integrate their VIM applications with Microsoft's future messaging subsystems, and this is a way to ensure that happens."

Both messaging APIs specify a standard way for developers to create applications that utilize underlying mail transport systems. The APIs could be used, for example, to enable users to call up E-mail directly from a spreadsheet or word processing program, or to build new mail-enabled applications, such as a work flow system.

"Having two opposing forces for mail APIs has stagnated development of mail-enabled applications," said Ann Palermo, research director at International Data Corp. in Framingham, Mass. "Lotus' concession to support MAPI is a benefit to corporate America."

The new integration software to be provided by Lotus will transform programming calls written to the VIM specification to MAPI. In addition, Lotus said this new software will allow mail-enabled applications written to the VIM specification to operate even in installations where only Micro-

(continued on page 61)

Heavy hitters team to build net/host link

By Caryn Gillooly
Senior Editor

SAN FRANCISCO — IBM and Novell, Inc. last week joined hands with Bus-Tech, Inc. to introduce an interconnect controller designed to connect NetWare local-area networks directly to IBM mainframes.

The product, dubbed the 3172-BTI, combines IBM's 3172 interconnect controller, Novell's NetWare and NetWare for SAA software, and Bus-Tech's channel-attached technology in a single box.

Integrating the components will save customers from having to buy a separate machine to run NetWare for SAA and means they will not have to use IBM 3745 front-end processors (FEP) or 3174 cluster controllers for LAN connections.

(continued on page 62)

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Apple ties Mac into SNMP net management systems

By Timothy O'Brien
West Coast Bureau Chief

SAN FRANCISCO — Claiming users have been asking for the capability for years, Apple Computer, Inc. last week announced new versions of its network software that allow users to manage networked Macintoshes using the Simple Network Management Protocol.

Introduced at the INTEROP 92 Fall show here, AppleTalk Connection for Macintosh and TCP/IP Connection for Macintosh provide SNMP agents that enable system administrators to manage Macintoshes using standard SNMP management consoles, such as IBM's AIX NetView/6000 and Hewlett-Packard Co.'s OpenView.

"By allowing the Macintosh to be tied into SNMP management systems, we now fit in," said Dana Harrison, product-line manager for AppleTalk Network Systems. "Corporations don't need to use a different system to manage Macintoshes any more."

Both the AppleTalk and the Transmission Control Protocol/Internet Protocol products provide SNMP support through a new System 7 operating system service called the SNMP Manager, which is designed to support SNMP agents provided by both Apple and other developers.

The SNMP agents provided with Apple's two new products include the Network Agent, which provides information on network links; the AppleTalk Agent and TCP/IP Agent, which collect data about the respective protocols; and the Macintosh Agent, which collects data about Macintosh hardware and software configuration.

All information provided by these agents is available to third-party SNMP consoles over both TCP/IP and AppleTalk protocols. Harrison said Apple will be looking to support the emerging Simple Management Protocol.

AppleTalk Connection for Macintosh will be available in three versions: The single-user version costs $39, the 20-user version costs $200, and the 200-user version is priced at $1,400. The AppleTalk Administrator's Kit costs $129.

TCP/IP Connection for Macintosh is priced at $59 for a single user, $500 for 20 users and

(continued on page 63)

Microsoft calls upon copper

continued from page 1

to and build on top of," he said.

Microsoft's plans represent a vote of confidence for supporting FDDI on unshielded twisted-pair wire, an approach backed by a team led by Crescendo Communications, Inc. and Cabletron Systems, Inc. Their encoding scheme was recently approved by an ANSI standard subcommittee over a competing scheme from a group led by IBM for running FDDI over shielded wire.

Microsoft will use Crescendo hubs and Extended Industry Standard Architecture-bus adapter cards in campus buildings to push 100M bit/sec speeds out to some desktop users and in its data center to support specific servers. The configuration will essentially result in an end-to-end FDDI net for some users.

Other users will continue to be supported with a mix of Ethernet technologies — some on shared links and others supported by dedicated 10M bit/sec connections from hubs.

According to Leinweber, Microsoft settled on FDDI over unshielded twisted-pair wire for several reasons: the company has installed high-quality Category 5 data grade unshielded twisted-pair wire to the desktop; FDDI-over-copper technology is moving toward standardization; and Microsoft has successfully tested the technology.

By next spring, Microsoft hopes to have about 200 of Crescendo's Copper Distributed Data Interface adapters and more than 30 CDDI hubs installed, Leinweber said. Initially, Microsoft will upgrade the personal computers of key internal developers and its main data center file servers, some of which are in such demand that as many as 250 users attempt to access them simultaneously, he said.

The CDDI gear is particularly well suited for the high-bandwidth needs of Microsoft developers working on Windows NT and Workgroup for Windows, Leinweber said. It will also be used to support new symmetrical multiprocessing servers and those based on Reduced Instruction Set Computing being installed to run Windows NT — systems that will not realize their full potential even with dedicated Ethernet links, he said.

> Diving into new technology is a common practice for Microsoft's network group.
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The potential size of Microsoft's copper FDDI network is huge, Leinweber added, considering that there are some 15,000 personal computers on the campus and 750 servers at the data center.

Diving into new technology is a common practice for Microsoft's network group, which is always looking for ways to improve network performance, Leinweber said. Microsoft installed a production FDDI backbone net in 1989 — the first production FDDI network ever, he said. That network is now being segmented into a campus backbone supporting buildingwide FDDI nets in an effort to increase performance.

Other steps taken to satisfy user bandwidth needs include installation of Ungermann-Bass, Inc. Access/One wiring hubs for shared Ethernet connectivity and 3Com Corp. 3GH wiring hubs for dedicated Ethernet to the desktop. The dedicated links provide about 7M bit/sec throughput, which is a vast improvement over shared Ethernet, but not enough for many of Microsoft's developers. The CDDI network will enable users to obtain throughput closer to 30M bit/sec, Leinweber said.

More to come

Although CDDI will satisfy users for the time being, more upgrades are sure to follow.

"There's always a bottleneck, and it's typically of a cyclical nature," Leinweber said. "At first, the network itself is the bottleneck, but once that's upgraded, we find that the processing capacity of the desktop systems is the bottleneck. When [Intel 80586-based computers] come along, the network will become the bottleneck again."

Microsoft has been keeping an eye on developments in other emerging high-bandwidth technologies, such as Asynchronous Transfer Mode and 100M bit/sec Ethernet, Leinweber said. It will likely adopt ATM as a metropolitan-area network technology, but that could be a few years out, he said.

Talk of 100M bit/sec Ethernet is not of great interest because it does not appear to be real Ethernet, Leinweber said.

Microsoft's next big network upgrade probably will be the displacement of several 3GH hubs at its data center by a high-speed matrix switch, he said.

Taking SMDS over long haul

continued from page 1

have to predefine end points."

The National Association of Securities Dealers, Inc., the first user of the service, will test it for delivering information to multiple locations simultaneously.

The SMDS offering will be available on a limited basis immediately and will be generally available by mid-1993. Pricing has not been announced, but Russo said MCI will offer both fixed-rate pricing and a usage-based plan with a cap at 120% of the fixed rate.

MCI will offer the service using a network of Siemens Stromberg-Carlson switches that support the IEEE 802.6 standard and Wellfleet Communications, Inc. routers. The same equipment supports the carrier's frame relay service, which it began offering in June.

With its network already in place, MCI will be able to deploy its SMDS service at more than 300 points of presence, Russo said.

Access will be offered not only at the Bell Communications Research-defined speeds of 1.544M bit/sec and 45M bit/sec, but also at subrate speeds starting at 64K bit/sec, he said.

The subrate access option will enable users to access SMDS via connections to MCI's Wellfleet routers, which convert incoming traffic into 53-byte SMDS cells. That obviates the need for users to upgrade their equipment to support SMDS, which will be required for T-1 and T-3 access, Russo said.

Initially, MCI will provide only direct access to its SMDS net, but that could change as SMDS offerings emerge from local carriers.

VPDS HyperStream will be manageable via a new Simple Network Management Protocol-based net management system from MCI dubbed HyperScope or other SNMP-based management systems. Users will be able to collect SMDS traffic statistics and monitor activity between sites, for example.

Because the VPDS HyperStream network is based on cell relay switches, the service should provide an easy migration path to Asynchronous Transfer Mode offerings, said Steve Sazegari, a Foster City, Calif., consultant.

On the other hand, MCI's support for low-speed access to its SMDS net may compete directly with frame relay, he added.

Daniel Briere, president of TeleChoice, Inc., a Montclair, N.J., consulting firm, said the MCI announcement and the advent of local carrier SMDS services is giving SMDS momentum. But it is still unclear whether all the long-haul carriers will join the fray.

"MCI's new service announcement should at least prod the other long-distance carriers to announce their intentions," he said.

AT&T said it has not yet decided if it will offer SMDS.

"We're hearing a lot from our customers about frame relay and ATM," an AT&T spokeswoman said. "But we're not hearing that same level of interest in SMDS, so we haven't made a final decision on [the service]."

A WilTel spokesman gave a similar response. "SMDS is something we will look into if our customers tell us they need it," he said. "We expect to be able to support it if need be."

Senior Editor Bob Wallace contributed to this story.

HP unveils apps for SNA, DECnet

continued from page 4

that allows OpenView for Windows to perform configuration and inventory management and monitor the performance of NetWare nodes, including servers, routers and workstations.

Network Edge, Inc. offers StationView and ServerView, applications that allow OpenView to perform fault, configuration, performance, security and accounting management of NetWare local-area networks.

StationView and ServerView collect information about workstations and servers, monitor network trends and notify network administrators of NetWare events, such as disks running out of space or a broken network connection.

LANExam is priced at $595 and is available now. StationView will ship in December, and ServerView will be released in the first quarter of 1993. Pricing for the latter two products was not disclosed.

Other developments

In related news, Pacific Bell's Data Communications Group announced its intention to offer network management services for local- and wide-area networks based on a software framework developed by HP and business partners ISICAD, Inc. and Remedy Corp. The framework, called Comprehensive Network Management, integrates OpenView, ISICAD's Command system and Remedy's Action Request System to provide physical, logical and help desk management of LANs and WANs.

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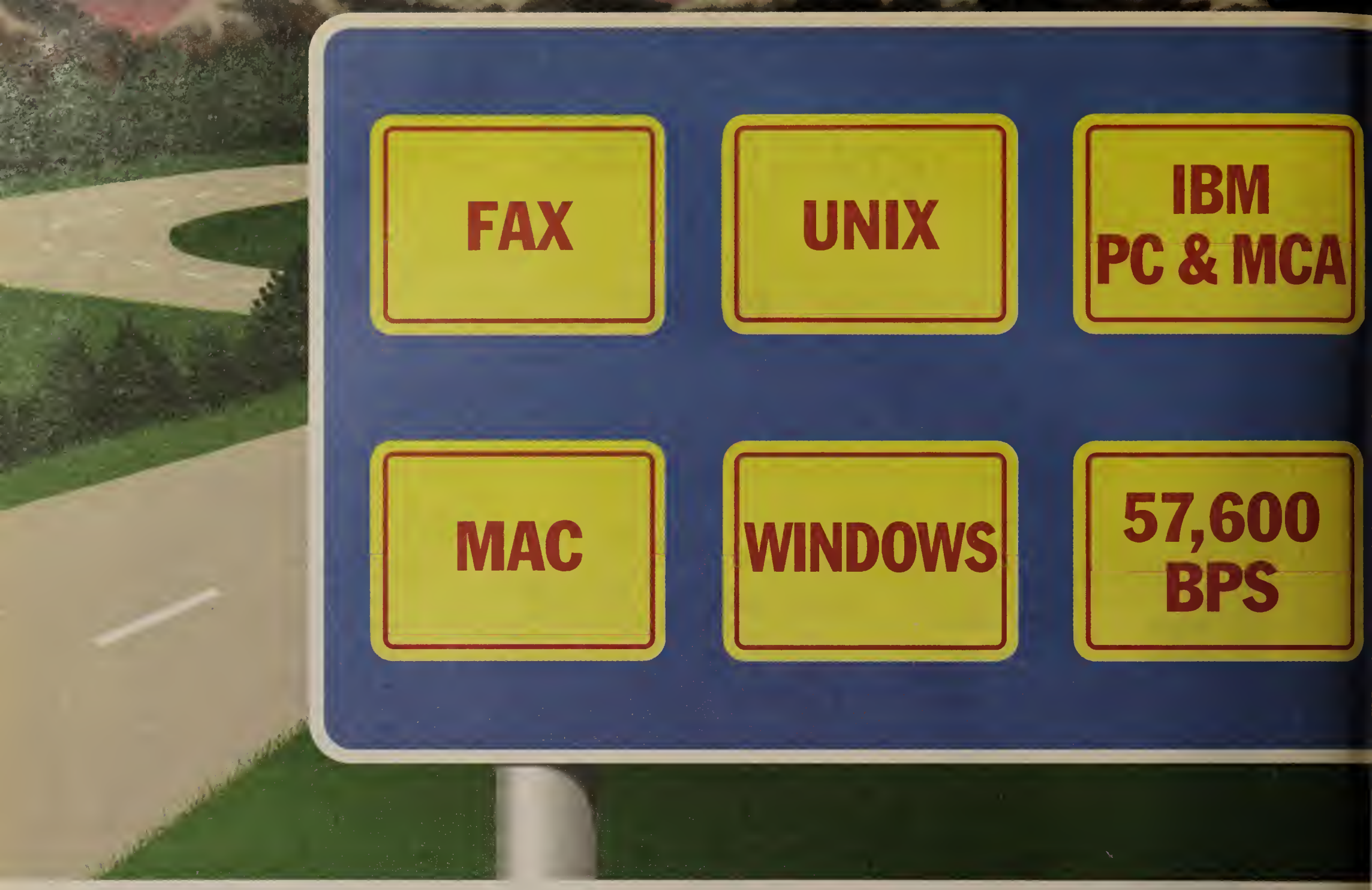

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Worth Noting

"SNA users looking to downsize have to realize they'll be replacing SNA because hybrid environments are expensive to maintain and performance may not be adequate."

Ron Peri
President of Computer Support of North America, a systems integration firm in Basking Ridge, N.J.

Data Packets

IBM has announced that its Rome Networking Systems lab has been accredited by the National Institute of Standards to test for product conformance with the Government Open Systems Interconnection Profile (GOSIP).

The announcement means IBM can test and verify that its own equipment conforms to GOSIP requirements, although the lab will not perform testing for other vendors' equipment. The lab was accredited for testing Layers 4 through 7 of the seven-layer OSI model.

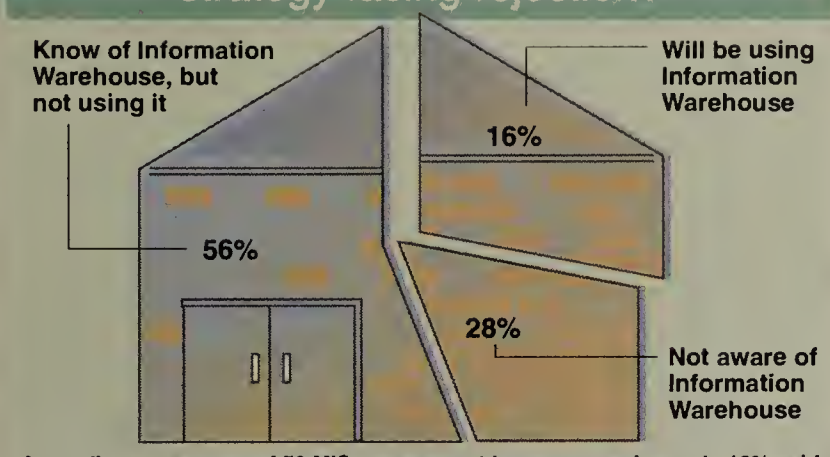
IBM's OSI product development is based in Rome.

Data General Corp. of Westborough, Mass., has added support for IBM's Common Program Interface-Communications (CPI-C) to programs that run on its line of AViiON workstations and servers.

By giving AViiON support for CPI-C, the common application program interface for IBM's Systems Application Architecture, DG ensures that AViiON applications can communicate with other CPI-C applications on IBM or other vendors' platforms.

(continued on page 19)

IBM's Information Warehouse strategy facing rejection?



According to a survey of 50 MIS managers at large companies, only 16% said they would use mainframe-based data warehouses such as IBM's Information Warehouse, while most will build "datamarts," which are LAN databases containing corporate, workgroup or personal data.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: FORRESTER RESEARCH, INC., CAMBRIDGE, MASS.

IDEA provides SNA users with better LAN integration

Rolls out bridge/router wares and first LAN hub.

By Michael Cooney
Senior Editor

BILLERICA, Mass. — In an effort to make it easier to integrate local-area network traffic into Systems Network Architecture backbones, IDEA last week introduced bridge/router products for its Concert cluster controller line and its first LAN hub.

The products let users link remote personal computer- and terminal-based work groups to SNA host applications over an existing LAN internet, eliminating the need for additional bridge or routing gear and separate or duplicate SNA links to the mainframe.

The company's PC communications division, IDEAcomm, rolled out a bridge/router board and software that fit in its IBM 3174-compatible Concert Communications Processor and support the routing of SNA data by encapsulating it inside Transmission Control Protocol/Internet Protocol or Novell, Inc. Internetwork Packet Exchange (IPX) packets.

The so-called BRouter board includes a Reduced Instruction Set Computing-based processor and 8M bytes of memory and performs the bridge/routing without involving the controllers' main CPU.

The board and software can support one Ethernet or token-ring link and two RS-232, X.21 or V.35 wide-area connections at speeds up to 2.5M bit/sec. As many as four BRouter boards can reside in the controller.

The BRouter obviates the need to buy separate routing equipment, said David Berman, director of IDEA's internetworking products. Plus, the board and software can be added to existing Concert controllers so new controller boxes are not needed.

Analysts said the Concert controller using the BRouter product would be useful for small to mid-size remote LAN users that need to attach their LANs to a corporate SNA backbone.

> The board performs the bridge/routing without involving the controllers' main CPU.
>
> ▲▲▲

IDEA also announced a software version of the BRouter that is a NetWare Loadable Module (NLM) for Novell NetWare servers. "The BRouter NLM will let NetWare users access the SNA backbone or host? without having to buy a separate bridge or routing box," Berman said.

New hub

In addition to the BRouter line, the firm rolled out its first LAN hub. The IDEAhub is a modu-

(continued on page 19)

Firms team to offer multivendor mgmt.

Boole & Babbage Command/Post will work with HP OpenView to provide net and systems mgmt.

By Michael Cooney
Senior Editor

SUNNYVALE, Calif. — Hewlett-Packard Co. and Boole & Babbage, Inc. last week joined forces to offer a network and systems management platform that lets users control SNMP-based and legacy systems.

The companies announced that Boole & Babbage's Command/Post net and systems management software and HP's OpenView network management software will be able to exchange alerts and alarms, giving users a single point of control over mixed multivendor environments.

Boole & Babbage's Command/Post will run as an application on top of HP's OpenView and feed network and systems management alarms about conditions such as failing devices through existing OpenView interfaces on the HP platform.

The failing device will send an alarm that flashes on the OpenView graphical monitor as an icon. The OpenView operator can click on the icon, see what the problem is and call for service or kick off an automated response, such as a restart or dial-backup, through Command/Post.

Users also have the choice of using Command/Post's graphical monitor and having OpenView-managed nets pass alerts that will appear as icons on the Command/Post screen. OpenView, however, doesn't support automated responses, analysts said.

Command/Post, previously sold as Net/Command, provides a single point of control for managing devices, such as multiplexers and modems, or software,

(continued on page 19)

Software draws HP, ICL, DEC environments closer

By Jim Duffy
Senior Editor

SAN FRANCISCO — Thursby Software Systems, Inc. rolled out software at INTEROP 92 Fall here last week that fosters harmony among Hewlett-Packard Co., International Computers, Ltd. (ICL) and Digital Equipment Corp. environments.

Thursby, a developer of DECnet connectivity software, unveiled versions of its TSSnet package for HP's 9000 Series workstations and ICL's DRS 6000 systems, making it possible for these devices to communicate with VAX/VMS processors over DECnet backbones.

TSSnet for the HP 9000 Series and TSSnet for the ICL DRS 6000 allow those platforms to participate in DECnet networks as full DECnet Phase IV end nodes, meaning they can be configured and administered on the network as if they are VAX workstations or terminals.

TSSnet allows HP and ICL users to log on to DEC hosts and access network printers using DEC's Local Area Transport (LAT) terminal protocol. The systems can locally and remotely transfer single and multiple files and share electronic mail messages with DEC VAXes.

The software also allows DECwindows and other X Window System clients on the network to access files on the HP 9000 and ICL DRS 6000, Thursby said.

HP and ICL systems can also communicate with Apple Computer, Inc. Macintoshes over a DECnet backbone if the Macintoshes are running TSSnet, Thursby said.

TSSnet is designed to provide connectivity between DEC VAXes, Unix workstations — including IBM's AIX-based systems — and Macintoshes via DECnet routing and LAT host, terminal and print services.

TSSnet also allows like systems to communicate via their native protocols while they establish sessions with VAXes, Macin-

(continued on page 12)

(WHEW!)

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NSA unwraps TCP/IP-to-SNA pack to bypass need for mainframe

By Jim Duffy
Senior Editor

LAGUNA HILLS, Calif. — Network Software Associates, Inc. (NSA) has added Transmission Control Protocol/Internet Protocol drivers to a handful of its products to enable them to support third-party TCP/IP protocol stacks.

With the drivers, the company's 3270 terminal emulation, Advanced Program-to-Program Communications (APPC) and local-area network gateway software can be used in TCP/IP networks to let Windows and DOS clients access data and applications on IBM mainframes.

The drivers have been added to Version 2.2 of NSA's 3270/ElitePlus, which provides 3270 terminal emulation for DOS clients; Version 3.4 of DynaComm/Elite, which establishes 3270 and APPC sessions between Windows clients and IBM hosts; and Version 4.4 of the AdaptSNA LAN gateway. The gateway allows users on Arcnet, Ethernet and token-ring LANs to access Systems Network Architecture resources.

Though TCP/IP-to-SNA connectivity products are not new, NSA believes its software sidesteps the limitations and expense of other offerings. Most TCP/IP-to-SNA products require IBM mainframes to run a Telnet server program.

With NSA's software, TCP/IP workstations emulate 3270 terminals. Users don't have to acquire expensive mainframe software to transform the IBM host into a TCP/IP node.

Telnet software is also functionally limited, NSA claims, because it does not provide 3270 printer emulation and does not support NetView network management, IND$FILE file transfers or, in most cases, IBM's High Level Language Application Program Interfaces (HLLAPI). HLLAPI is a common API for SNA terminal-to-host applications.

These SNA services are maintained when TCP/IP users emulate 3270 terminals instead of emulating Telnet terminals, NSA said.

> The gateway allows users on Arcnet, Ethernet and token-ring LANs to access SNA resources.
>
> ▲▲▲

Version 2.2 of Elite/Plus is priced at $395 and will be available this month. Version 3.4 of DynaComm/Elite is priced at $495 and will also be available later this month. Version 4.4 of the AdaptSNA LAN gateway ranges in price from $595 to $3,995.

Software draws environments closer

continued from page 9

toshes and other TSSnet nodes through TSSnet.

With the latest releases of TSSnet, Thursby is not only addressing installations where HP and ICL systems coreside with VAXes, but is also acknowledging the need for users to integrate Unix systems into proprietary backbones.

The industry has seen a recent spurt in Unix-to-proprietary network connectivity wares, especially in the IBM Systems Network Architecture arena.

Last month, for example, IBM announced it will release versions of its CICS transaction monitor for its RISC System/6000 and HP's 3000 and 9000 Series systems. Also, Integris unveiled software that lets users move CICS applications to a variety of Unix boxes.

Additionally, Unisys Corp. earlier this year brought out a processor that lets 3270 users access applications on Unix servers using native SNA commands and protocols. While the IBM and Integris products allow users to run IBM mainframe applications on Unix systems, the Unisys product enables IBM users to access Unix applications while keeping mainframe applications on the SNA host.

Prices for TSSnet for the HP 9000 range from $1,500 to $5,000. It is scheduled to ship in the first quarter of 1993.

Prices for TSSnet for the ICL DRS 6000 range from $2,295 to $8,295. It will ship this month.

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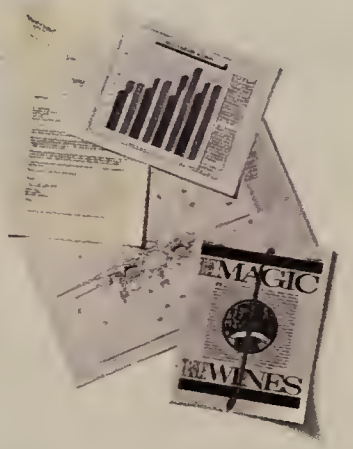

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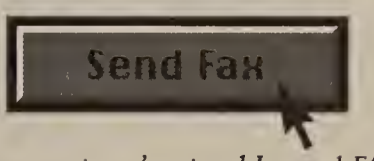

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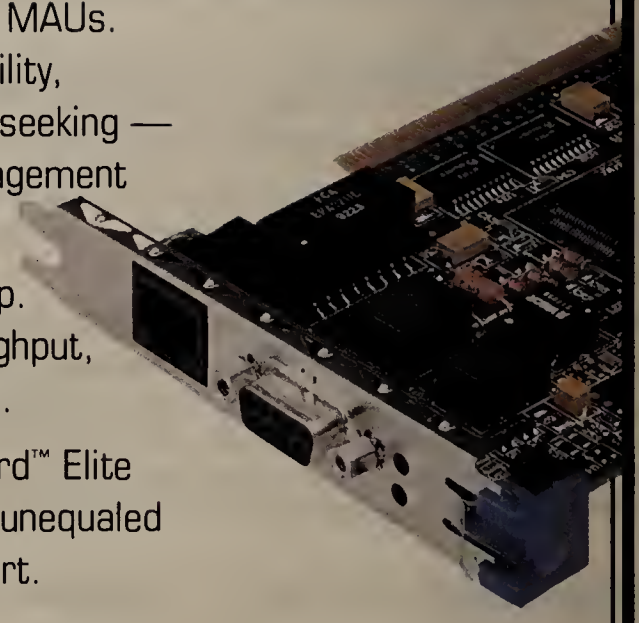

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Joke told by NetWorld '92 Dallas speaker

Netnotes

Network Computing, Inc. (NCI) last week announced an agreement with Hewlett-Packard Co. under which it will integrate the LANExam module of its LANAlert system management product suite with HP's OpenView, allowing users to employ LANExam from an OpenView management console.

LANExam can now provide configuration, inventory and performance management of all Novell, Inc. NetWare nodes on the network using an OpenView management system.

The LANExam module of the LANAlert system is available now for $595. NCI is based in San Jose, Calif.

Irvine, Calif.-based **Gateway Communications, Inc.** has brought out a LAN access subsystem that gives remote users a variety of connectivity options when linking to the office local-area network.

The product consists of both hardware and software. The hardware is a personal computer-based device that attaches directly to any Novell, Inc. NetWare Ethernet LAN and acts as a fully func-

(continued on page 18)

Novell adds client, server TCP/IP connectivity wares

Offerings extend the reach of NetWare users.

By Caryn Gillooly
Senior Editor

SAN FRANCISCO — Novell, Inc. last week beefed up its LAN WorkPlace line with the addition of both client- and server-based TCP/IP connectivity products.

At INTEROP 92 Fall here, Novell introduced LAN WorkGroup, LAN WorkShop and a new version of its LAN WorkPlace for DOS, all of which are designed to let NetWare users access Unix environments via the Transmission Control Protocol/Internet Protocol.

The new LAN WorkGroup provides connectivity through the server, while LAN WorkPlace for DOS offers connectivity through the individual client. LAN WorkShop lets third parties develop applications based on Novell's TCP/IP connectivity products.

LAN WorkGroup is basically a server-based TCP/IP protocol stack. Loaded on either a NetWare 2.X or 3.X server, LAN WorkGroup gives users concurrent access to both Unix- and NetWare-based resources, such as file and print services.

Before this release, Novell offered TCP/IP connectivity only from the individual client. The server-based approach is attractive because it eases client memory requirements and is easier to manage and administer.

For net management, LAN WorkGroup contains Simple Network Management Protocol management agents that let administrators centrally monitor both Unix and NetWare nodes. It also lets net managers centrally configure and assign IP addresses for individual workstations.

"LAN WorkGroup's centralized installation and administration allow us to set up networks much more quickly and efficiently," said David Willis, manager of network systems for the American Red Cross national headquarters in Washington, D.C., a beta

(continued on page 18)

IBM to release new LAN electronic mail gateway

TAMPA, Fla. — IBM next month will make available a LAN software gateway that helps users connect disparate LAN- and host-based electronic mail systems.

With the new software, dubbed IBM Mail Local Area Network Gateway/2, users of IBM's Mail Exchange E-mail service will now be able to exchange mail with users of different E-mail systems. Until now, customers could only use the service to communicate with other companies that used the same E-mail software.

The gateway will enable Mail Exchange users to share mail with users of cc:Mail, OfficeVision/400 and DISOSS. By the end of January, IBM also plans to add support for Novell's Internetwork Packet Exchange (IPX), providing exchange capabilities for cc:Mail packages running in Novell, Inc. NetWare environments.

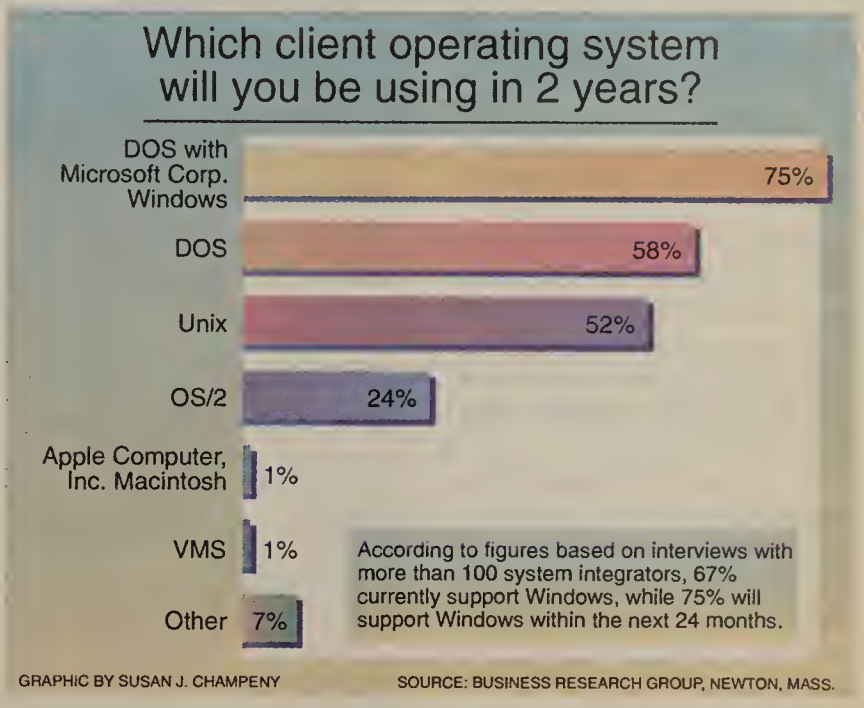
The vendor plans to further broaden the IBM Mail LAN Gateway/2 capabilities by adding support for OfficeVision/VM, the Professional Office System and Lotus Development, Inc. Notes by the first half of next year.

"Customers need to be able to communicate with all their trading partners and employees that may be using a variety of electronic mail platforms," said Jim Pickerill, director of marketing and support for the IBM Information Network within the IBM Network Systems division, based here. "The gateway brings their dissimilar systems together."

IBM's Mail Exchange is offered over IBM's Information Network, a packet-switched net.

The Mail LAN Gateway/2 runs on a LAN-attached, OS/2-based IBM Personal System/2, which can be the network server or simply a shared personal computer providing remote connectivity capabilities such as a communications server.

IBM Mail LAN Gateway/2 will be available next month, ranging in price from $2,000 to $10,000, depending on the number of users.



Microsoft marches into peer net market

Move raises questions about whether vendor will dominate or just play part in nascent industry.

By Caryn Gillooly
Senior Editor

NEW YORK — Microsoft Corp. last week officially became a player in the peer-to-peer networking market with the release of Windows for Workgroups, a new version of Microsoft Windows with built-in peer networking capabilities.

Products of this ilk — which enable users to share files and printers without a file server — have been provided for years by nearly a dozen vendors. For example, Artisoft, Inc. offers LANtastic, Tiara Computer Systems, Inc. provides 10Net, Webcorp makes Web, and Sitka Corp. offers its TOPS line (see graphic, page 18).

Even companies such as Novell, Inc. have jumped on the peer networking bandwagon. Novell makes NetWare Lite, a low-end, peer-to-peer version of its flagship server-based NetWare network operating system.

Microsoft, however, is the first major vendor — with the exception of Apple Computer, Inc. — to make peer networking capabilities inherent in an operating system. Apple's System 7 has comparable capabilities.

This raises questions about the future of the peer-to-peer net market: Will Microsoft take over the market, causing existing peer networking vendors to fall by the wayside? Or will Microsoft simply become one of the peer networking players, providing their own niche product?

Analysts predict some combination of the two scenarios, leaning toward the latter. They stressed that Microsoft will not be able to provide the same advanced capabilities in a workstation operating system as is cur-

> "This will definitely educate the market, especially the end users," Hare said.
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rently offered through the peer-to-peer network operating systems.

Growing the industry

There are two distinct sides to the issue. On one hand, just as when any large company enters a fairly small market, the entrance of Microsoft into the peer networking market serves to legitimize a growing area.

"This will definitely educate the market, especially the end users," said Susan Hare, director of marketing communications at Tiara, based in Mountain View, Calif.

(continued on page 18)

Microsoft moves into peer nets

continued from page 17

"People who were not considering networking before may now look into it," she said. "So this may increase the overall business simply through the education process."

However, many of these new customers — as well as customers already considering peer capabilities — may well choose Microsoft, making the company a major competitor of the existing peer networking vendors. Many of the lowest end Windows users may now simply upgrade to Windows for Workgroups.

According to analysts, this may cause a minor shake-out in the market, eliminating the smaller companies that had focused on the customer sites that needed to connect between two and 10 users.

Analysts stressed, however, that customers should look at the bottom line: Microsoft is not providing another peer network operating system, but merely adding simple file and print capabilities to Windows. For most customers, analysts agreed, this will not be enough.

"While [Windows for Workgroups] appears to replicate [products such as] Artisoft's LANtastic, substantial technologic and marketing issues differentiate the products," according to a recent report by Bear, Stearns & Co., based here. "Microsoft's inclusion of simple networking features in Windows is not a true network operating system."

Most importantly, Windows for Workgroups does not support DOS users or any other types of clients. This means Windows for Workgroups users will only be able to share files or printers with other users that have the same base operating system product installed.

In contrast, all the major peer network operating systems support DOS, Windows, OS/2 and Apple's Macintosh. For this reason, existing peer-to-peer vendors are positioning their products as complementary to Windows for Workgroups.

"There will be areas where the products will compete, but there will be a lot more instances where they will be complementary," said Tiara's Hare. "First, there are a lot of applications that are still DOS-based that cannot run under Windows for Workgroups.

"Second, if you have a mixed environment with Windows and DOS clients, you can run 10Net on top," she said.

Who's who in the peer-to-peer market

Vendor	Primary products
Artisoft, Inc.	LANtastic
CBIS, Inc.	Network OS-Plus
Hayes Microcomputer Products, Inc.	LANstep
Invisible Software, Inc.	Invisible Network
Moses Computers, Inc.	MosesAll!, PromiseLAN Fast, ChosenLAN
Net-Source, Inc.	SilverNet
Novell, Inc.	NetWare Lite
Performance Technology, Inc.	PowerLan
Sitka Corp.	DosTOPS, SunTOPs, MacTOPS
Tiara Computer Systems, Inc.	10Net
Webcorp	Web

GRAPHIC BY SUSAN J. CHAMPENY

Novell adds TCP/IP wares

continued from page 17

site for the product.

"LAN WorkGroup dovetails nicely with our LAN WorkPlace for DOS installation," Willis continued. "We expect to use it to expand access to our remote networks without paying a heavy technical support penalty."

On the client side, the new version of Novell's LAN WorkPlace for DOS has two primary enhancements. First, it now accommodates mobile users by supporting the Serial Line Internet Protocol and Point-to-Point Protocol standards, in addition to Hayes Microcomputer Products, Inc.-compatible modem drivers, enabling these users to access TCP/IP services.

Second, the new version — like LAN WorkGroup — supports SNMP, letting managers of SNMP-based nets monitor individual NetWare workstations. It also includes a new utility, called LWPCON, that lets the individual user look at SNMP information from any LAN WorkPlace station.

For developers, Novell last week brought out LAN WorkShop, a package that lets independent software vendors write distributed applications that use Novell's LAN WorkPlace TCP/IP protocol. The package consists of tool kits for DOS, Microsoft Corp. Windows, OS/2 and Apple Computer, Inc. Macintosh clients.

LAN WorkGroup comes in five-, 10-, 20-, 50-, 100- and 250-user versions priced from $1,500 to $12,495. LAN WorkPlace for DOS 4.1 costs $399 for one user, $1,995 for 10 users and $12,995 for 100 users. LAN WorkShop costs $495. All of the products will be available next month.

Netnotes

continued from page 17

tioning NetWare node. The software offers remote users three primary connectivity options.

First, through the NetWare Access Mode, users' remote PCs will be able to act as a NetWare node on the LAN and access files on the server, although they will be restricted to telephone line speeds.

With Remote Keyboard and Screen Mode, however, users will be able to take control of the LAN Expander node, which can manipulate files at LAN speeds.

Finally, through PC Remote Control Mode, users will be able to take control of a PC on the NetWare LAN to run applications at LAN speeds. Users will still be restricted to dial-up speeds for transmitting files, however.

LAN Expander will be available next month with a 10-user site license for $795.

IDEA provides better integration

continued from page 9

lar, four-slot intelligent hub capable of supporting token-ring or Ethernet LANs.

The IDEAhub supports as many as 48 Ethernet or token-ring connections per hub. Users can daisy-chain as many as eight hubs together as one unit. The hub supports shielded or unshielded twisted-pair wiring and fiber-optic lines for the token-ring environment. The port modules are hot-swappable so they can be installed or replaced without shutting the hub off.

The hub can be managed by either Novell's HubCon hub management software or from IDEA's Concert controller.

Berman said the hub was not designed to compete with hub market leaders such as SynOptics Communications, Inc., but rather to provide a general purpose hub so remote LAN users could better manage their work groups.

IDEA Concert Communications Processors and software range in price from $2,495 to $24,820. The IDEAcomm BRouter will be available in an Ethernet version for $2,494 and a token-ring version for $2,995. Pricing for IDEAhub was not announced. All of the products will be available in January.

Data Packets

continued from page 9

DG's AViiON System Network Architecture product line includes 3270 emulation, remote job entry emulation and bisynchronous support.

All IBM communications products for AViiON are available now and priced from $750 to $3,000, depending on CPU type and size.

The firm also announced that AViiON boxes can now be managed by IBM's NetView network management platform.

NCR Corp. last week announced it will make the Open Software Foundation, Inc.'s Distributed Computing Environment (DCE) technology available on its NCR System 3000 Unix V.4 family. First customer availability of a beta software version of DCE Application Support for Unix V.4 will be in December. DCE Core Services will be available by mid-1993.

Firms team to offer management

continued from page 9

such as transaction processing or database applications. Its automation tool lets users program responses to common net or system failures without user intervention.

It includes a graphical monitor and a Sybase, Inc. relational database to display and keep track of net or system status, respectively.

The product is used primarily in IBM Systems Network Architecture nets today, analysts said, but Boole & Babbage's strategy is to migrate it beyond SNA into more multivendor environments.

"This announcement strengthens HP OpenView by increasing its reach and function while at the same time giving Boole & Babbage the ability to work with [one of the best] standard network and system management platforms," said Joaquin Gonzalez, senior vice-president and director of global net strategies for the META Group, a Westport, Conn., consultancy.

HP's OpenView software manages multivendor Simple Network Management Protocol-based devices. It comes with a graphical user interface to display icons of managed systems. OpenView features an HP SQL-based database to store and track net resources. Both products run on Unix platforms, such as Sun Microsystems' SPARCstation, IBM's RISC System/6000 and HP's 9000 series.

> "Users will benefit by getting streamlined operations and saving on implementation time."
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"There are billions of dollars of legacy equipment that don't speak standards," said Jeff Thiemann, HP's OpenView product manager. "With Command/Post, we are letting users manage their existing legacy equipment, while they move to standards-based gear."

OpenView users can now monitor SNA or other devices they could not before, according to Jerry McDowell, director of Boole & Babbage's network products marketing. "Users will benefit by getting streamlined operations and saving on implementation time and expenses."

Users agreed with McDowell's observations.

"Multivendor systems and network management has been labor intensive for us," said C.J. Combs, a network analyst with Pacific Bell in Hayward, Calif. The company uses Boole & Babbage's Command/Post for fault management of its multivendor mid-range computer applications. The firm has been evaluating HP's OpenView to manage its network.

"Putting it all into one box should save us a lot of time and money," Combs said.

Boole & Babbage's Command/Post is available, and prices start at $45,000. OpenView is available now, with prices starting at $18,000.

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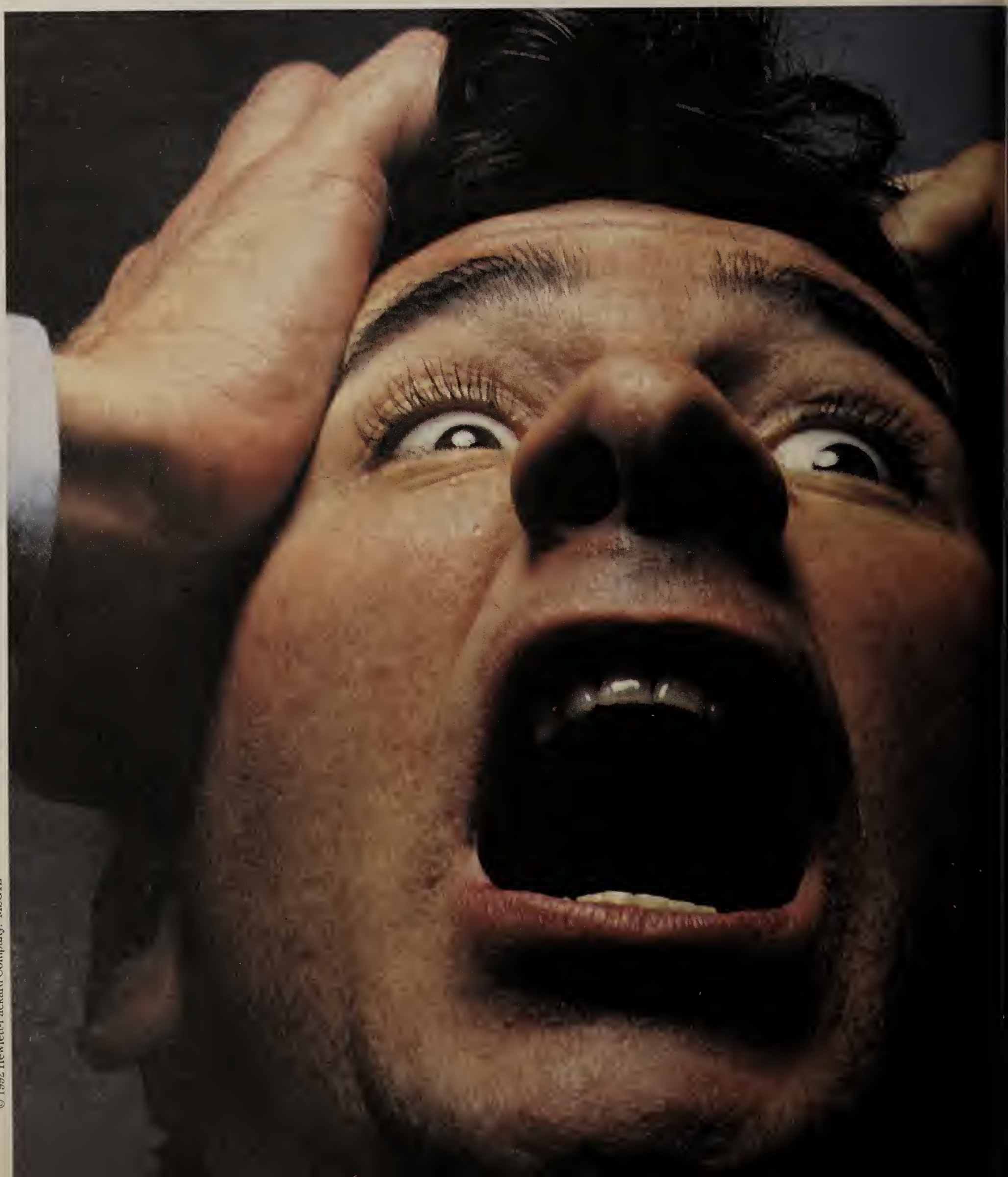

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For more information on HP JetStore tape products, please call **1-800-826-4111, Extension 7102.**

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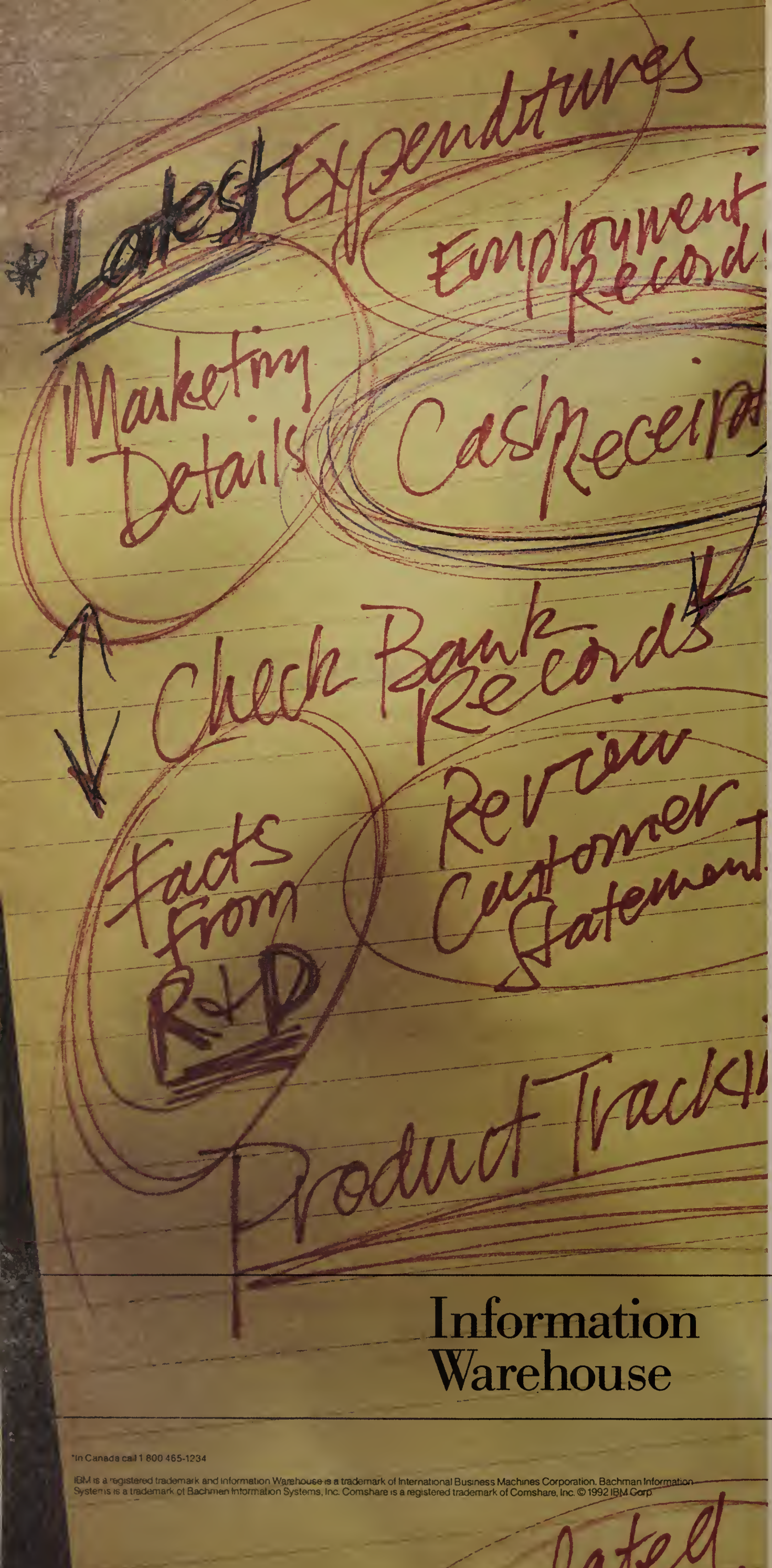

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INTERNETWORKS

LAN-TO-LAN AND LAN-TO-WAN EQUIPMENT AND STRATEGIES

Worth Noting

"To think you can go out tomorrow and magically replace all your token rings, Ethernets and FDDI nets with ATM is just not correct. ATM is very important, but it isn't the end-all, solve-all for everyone's problems."

Chris Oliver
Director of engineering and manufacturing
Cabletron Systems, Inc.
Rochester, N.H.

Link Notes

DigiBoard in Minneapolis last week rolled out Dual IMAC, an Integrated Services Digital Network terminal adapter/Ethernet bridge that can be used to link Ethernet local-area networks at speeds up to 256K bit/sec.

Dual IMAC supports two ISDN Basic Rate Interface lines, letting it take advantage of four 64K bit/sec B channels. These channels can be configured together to provide a 256K bit/sec pipe to one location or used separately to establish links to as many as four remote sites.

Available now, Dual IMAC costs $2,795. For more information, call (612) 943-9020.

Sigma Network Systems, Inc. has announced a 4M and 16M bit/sec token-ring interface for its ECS/1 intelligent hub, meaning the box now supports token-ring, Ethernet and Fiber Distributed Data Interface nets. It uses the Advanced Micro Devices, Inc.'s Am29000 25-MHz processor to perform multicast storm protection, data flow management, security and traffic analysis.

The interface can be man-

(continued on page 24)

Tekelec expands analyzer's reach with Ethernet option

Can support LAN, WAN devices simultaneously.

By Skip MacAskill and Maureen Molloy
Network World Staff

SAN FRANCISCO — Tekelec, Inc. announced at INTEROP 92 Fall last week it has added an Ethernet interface to its wide-area network protocol analyzer, enabling the device to support both local- and wide-area network devices simultaneously.

The Ethernet option for the Chameleon 1800 protocol analyzer is the first product to come out under the vendor's Open Diagnostic Access strategy.

The two-port Chameleon 1800 features a Motif graphical user interface. It can now track data, and provide analysis of and isolate network glitches on Ethernet, frame relay, X.25 or Integrated Services Digital Network Primary Rate Interface nets. It is capable of decoding and analyzing data in real time at speeds up to 2M bit/sec over a V.35 or T-1 interface.

The device isolates specific network trouble spots via filtering and triggering techniques for data capture.

The higher level protocols it can decode include Transmission Control Protocol/Internet Protocol and DECnet.

LAN protocols decoded include NetWare, AppleTalk, Xerox Network Systems, Open Systems Interconnection, TCP/IP, DECnet and the Simple Network Management Protocol.

The Chameleon 1800 Ethernet option monitors the data at the full 10M bit/sec Ethernet bandwidth. The data is displayed in a graphical or tabular form, and can be captured to a 4M-byte buffer.

The device can be controlled remotely from any management workstation running the X Window System Version R4.

The Ethernet analysis option costs $7,500 and will be available in December.

New dial-up router links remote sites

By Maureen Molloy
Senior Writer

ISSAQUAH, Wash. — Networks Northwest, Inc. announced at INTEROP 92 Fall last week a dial-up multiprotocol bridge/router that supports wide-area analog dial-up links at speeds up to 56K bit/sec.

The BReeze 1000 is a two-port bridge/router that supports one Ethernet local-area network and a single wide-area network port and is aimed at users in remote sites that want to access a corporate internet via dial-up analog lines.

The device is equipped with either a 14.4K bit/sec V.32bis modem or a V.fast 24K bit/sec modem. The V.32bis modem supports 4-to-1 data compression, meaning speeds of up to 56K bit/sec can be achieved.

The bridge/router supports the Transmission Control Protocol/Internet Protocol and Novell, Inc.'s Internetwork Packet Exchange (IPX) protocols.

The product also supports the Open Shortest Path First and the Routing Information Protocol as well as the Spanning Tree bridging algorithm.The bridge/router can be used as a backup for a leased 56K bit/sec in lieu of installing a second dedicated line to achieve redundancy. The bridge/router is equipped with a Simple Network Management Protocol agent, thereby enabling it to be monitored from any SNMP-based management station.

> The BReeze 1000 is aimed at remote users that want to access a corporate internet.
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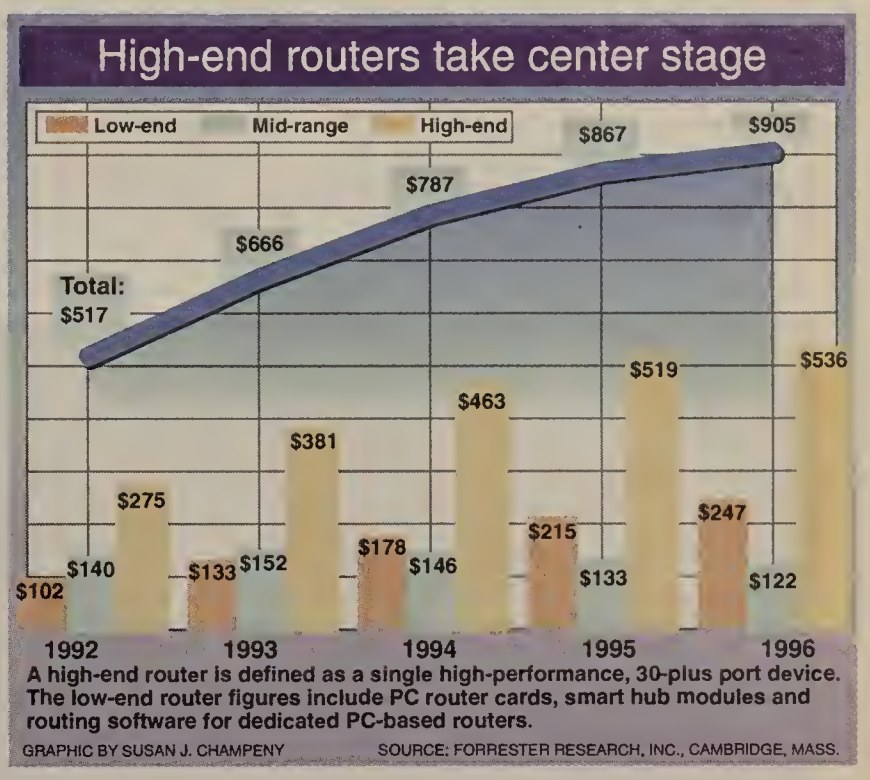
The BReeze 1000 costs $2,950 and will be available in December.

For more information, contact Networks Northwest at (206) 391-0618.



Penril releases first token-ring offerings

Vendor's new wares include stand-alone local and remote bridges as well as a bridging hub module.

By Skip MacAskill
Staff Writer

SAN FRANCISCO — Penril DataComm Networks, Inc. last week unveiled its first line of token-ring products, rolling out two bridges and a hub module at INTEROP 92 Fall here.

The token-ring rollout included the stand-alone Series 1230 Local Token Ring Bridge, the stand-alone Series 1240 Remote Token Ring Bridge and the Token Ring Module 50 for Penril's Series 2500 Bridging Hub.

The two-port 1230 supports either 4M or 16M bit/sec networks and can bridge between those networks, with filtering and forwarding rates of 3,900 packet/sec.

The 1240 comes equipped with one local-area network port, which can be either 4M or 16M bit/sec, and one or two wide-area network ports, which support speeds from 512K to 2M bit/sec. WAN interface options include RS-232, RS-530, V.35 and V.11. It offers the same performance as the 1230.

The second WAN port can be used to support load-sharing across redundant links or dial-up links to contend with line failure, congestion or time of day. Either of the links can be activated by an internal clock, so connections are dialed up only when needed.

Both bridges support the source routing protocol and are compatible with IBM Token-Ring products. Support for IBM's LAN Manager and Simple Network Management Protocol is expected early next year.

The 1230 local bridge is available now for $4,995, while the 1240 remote version, also avail-

> Support for IBM's LAN Manager and SNMP is expected early next year.
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able now, costs between $4,995 and $7,395, depending on the number of WAN ports and type of interfaces supported.

The token-ring module for Penril's Series 2500 Bridging Hub, the Token Ring Module 50, complements existing Fiber Distributed Data Interface and Ethernet modules, meaning the 2500 hub can now support all three LAN technologies.

The Reduced Instruction Set Computing (RISC)-based 2500 is

(continued on page 24)

Penril releases first token-ring offerings

continued from page 23

a five-slot hub that supports SNMP and can handle any combination of net interfaces. This is said to increase performance by reducing bridging to one hop between any two net environments.

Each Module 50 transparently bridges one 4M or 16M bit/sec token-ring LAN. Because of the RISC-based processor on each module, the device can filter and forward 64K-byte packets at the maximum token-ring rate of 3,900 packet/sec.

The Module 50, which will be available in early 1993, costs $3,100.

The company also announced that the FDDI module for its hub, the Module 10, now supports single-mode fiber, extending maximum fiber cable runs from 2 km to more than 40 km. The four-port Module 10 supports transparent translation bridging as well as multimode fiber connections.

The FDDI Module 10 is available now and is priced between $11,500 and $15,500, depending on the type of fiber needed for each port.

Link Notes

continued from page 23

aged by any Simple Network Management-based net management.

The token-ring interface costs $3,950 and is available now. For more information, contact Sigma at (617) 942-0200.

Apertus Technologies, Inc. announced at INTEROP 92 Fall last week the availability of two new products in their System Network Architecture-to-TCP/IP family of gateways.

The File Transfer Gateway allows users on Transmission Control Protocol/Internet Protocol nets to transfer files between an IBM host and other hosts using the File Transfer Protocol (FTP) native to their environment and without requiring the addition of an FTP server and TCP/IP software on the mainframe.

The Network Print Gateway translates IBM LU 1 or LU 3 print jobs into either Berkeley-compatible Line Printer Resource prints or TCP/IP "socket" prints. This makes it possible for existing TCP/IP printers on a LAN to be used by IBM hosts.

The gateways cost $2,995 each and will be available in December. Contact Apertus at (612) 828-0645.

Olicom USA, Inc. has announced a two-port token-ring local bridge. As its name implies, the Wire-Speed Local Bridge 16/4 has a packet forwarding rate that reaches token ring's 4M and 16M bit/sec wire speed for frame sizes of 256 bytes or greater.

The bridge costs $6,200 and is available next month.

For more information, contact Olicom at (214) 423-7560.

Shiva Corp. has reduced the price of its FastPath 5 LocalTalk-to-Ethernet gateway from $2,799 to $1,999. The price of the FastPath 5R, a rack-mountable version of the FastPath 5, has also been lowered from $2,799 to $1,999.

The price of the dual-unit FastPath 5R, which connects two LocalTalks and two Ethernets, has been reduced from $5,399 to $3,799.

Contact Shiva at (617) 252-6500.

Penril DataComm Networks, Inc. has rolled out Module 24, a four-port module for its Series 2500 bridging hub. Module 24 supports four Ethernet local-area networks, and the hub can support up to five modules. Available now, the Module 24 is priced at $6,000.

Penril also announced the Series 2000 routing hub, a five-slot chassis that can be configured with an Ethernet Module 20, which supports one Ethernet LAN; the Concentrator Module 30, which supports 24 10Base-T devices; and the WAN Module 40, which supports as many as four wide-area network links.

Pricing for the Series 2000 starts at $10,000. The product is available now.

Contact Penril at (301) 921-8600.

Standard Microsystems Corp. (SMC) last week announced a NetWare Loadable Module, called Hub Redirect, that will allow Novell, Inc.'s HubCon to manage SMC's external, Simple Network Management Protocol-based Ethernet hub, the 3512TPi.

Novell's HubCon only manages hub cards that comply with Novell's Hub Management Interface (HMI) specification. Hub Redirect will allow HubCon to manage both HMI-compliant and SMC's 3512TPi hubs.

Hub Redirect will be included at no charge with all 3512TPi intelligent hubs, as well as with the SMC Network Management Module, an upgrade module than can be added to the unmanaged version of the 3512TPi, the 3512TP. It will be available in December.

Worth Noting

"The average U.S. company runs a one in 18 risk of being hit with toll fraud in the course of a year, with the average hack being over $60,000."

John Haugh
Chairman of Telecommunications Advisors, Inc.
and author of "Toll Fraud and Telabuse"
Portland, Ore.

Regulatory Update

The **Federal Communications Commission** last week sounded the starting bell for microwave users to begin moving from their current spectrum assignments to make way for new wireless voice and data services. Chief among the new services to take over microwave frequencies are personal communications services (PCS).

Last week, the FCC issued the final text of its order specifying the 1.85-GHz to 2.2-GHz band for use by voice and data PCSs. That band is currently used by microwave users for applications such as public safety and oil pipeline monitoring.

The FCC order authorizes PCS providers to begin immediate negotiations to move microwave users. Microwave users who agree to move voluntarily will have all costs paid by the PCS provider.

The FCC has not yet determined how long the period for voluntary negotiations will continue, but it has suggested three to 10 years. After that time, microwave users may be moved involuntarily to make room for PCSs, with PSC providers again paying all costs of the move.

The FCC is still considering several administrative and technical issues relating to the microwave users' move.

Portability to boost 800-service revenues

(Figures in billions of dollars)

Carrier	1992	1993	1994	1995	1996	1997
AT&T	$6.47	$7.02	$7.18	$7.34	$7.50	$7.57
MCI Communications Corp.	0.42	0.71	1.05	1.31	1.61	1.91
Sprint Corp.	0.23	0.34	0.51	0.65	0.81	1.03
Others	0.61	0.67	0.72	0.78	0.82	0.86
Total	7.73	8.74	9.46	10.08	10.74	11.37
Percentage annual change	NA	13.1%	8.23%	6.49%	6.56%	5.94%

GRAPHIC BY SUSAN J. CHAMPENY — SOURCE: STRATEGIC TELEMEDIA, NEW YORK

US West expands internet service, details SMDS plans

Makes services attractive to a wider user base.

By Bob Wallace
Senior Editor

DENVER — US West, Inc.'s Advanced Communications Services business unit last week enhanced its LAN interconnection service and outlined plans for its frame relay and Switched Multimegabit Data Service (SMDS) offerings.

The carrier beefed up the internetworking service, dubbed Transparent LAN Service (TLS), by increasing from seven to 15 the number of local-area networks that can be linked and tripling the reach of the service from 25 to 75 miles from the serving central office.

> Strong user demand figured in the decision to enhance TLS and make it more widely available.
>
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The US West unit also improved the reliability of the service by making available the option of supporting TLS over self-healing fiber networks that use diversely routed fiber pairs to protect against disasters such as a fiber cut.

TLS, announced in August, is a fiber-based service that can be used to link LANs in major metropolitan areas at 4M, 10M and 16M bit/sec speeds ("US West unit introduces LAN interconnection service," *NW*, Aug. 24).

Joe Zell, director of service development, said strong user demand figured into the carrier's decision to enhance the offering and make it more widely available throughout its 14-state territory. Zell said the state of South Dakota, Hewlett-Packard Co., J.R. Simplot Co. and Maricopa County in Arizona are among the organizations that use TLS.

In addition to fortifying TLS, US West detailed plans to provide Customer Network Management (CNM) and usage billing for its public frame relay and SMDS offerings.

CNM is a Bell Communications Research specification that defines what type of SMDS management data will be available from net switches.

The carrier said AT&T has incorporated CNM in its StarKeeper system used to manage the Broadband Networking Switch-2000, the AT&T switch US West will use to offer SMDS and frame relay. This means users will be able to get the same net management data for frame relay that they can for SMDS.

With CNM, users will have online access to select net service management features, including up-to-date billing information, a major improvement over the hard-copy reports available now.

US West sees this as important because it plans to break from the ranks of carriers that charge flat rates for frame relay and SMDS and begin offering usage-sensitive pricing in early 1993.

US West last week also said it will more than double the number of cities in which it will offer SMDS.

The service will initially be available in Minneapolis, Seattle and here. Phoenix, Portland, Ore., and Salt Lake City will be added in May 1993.

Is open local access mart constitutional?

Industry questions whether recent order opening local access market violates 5th Amendment.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Enthusiasm over a recent FCC order opening the local access service market to competition began to falter last week as carriers and FCC officials expressed fears that it may violate the U.S. Constitution.

In September, the Federal Communications Commission ordered all major local exchange carriers to allow rival carriers and users to physically collocate equipment in local central offices. Carriers and FCC Chairman Alfred Sikes now question whether this arrangement violates the Fifth Amendment of the Constitution, which forbids government from taking property from citizens or businesses without proper compensation.

The FCC is concerned enough about these rumblings that it spent several pages defending the constitutionality of its decision in the full text of the order released recently. But carriers may not be satisfied with that explanation.

The carriers could ask the FCC to reconsider the decision, though it is unlikely the commission would back down. The carriers could then challenge the order in court, an option that at least one carrier, BellSouth Corp., has said it is evaluating.

If the FCC's order on collocation gets caught up in a lengthy legal battle, it would dash the hopes of users and carriers that had expected the decision to yield full competition in the local loop within the next few years.

By allowing collocation of equipment in the central offices of the dominant local carriers, rivals would be able to pick up private-line traffic originating at any user site served by that central office. Currently, the competitive local access carriers are restricted to carrying traffic from buildings linked by their own fiber-optic networks.

While the September order is strictly for private-line traffic, the FCC has also proposed allowing collocation for switched access services.

Royce Holland, president of Metropolitan Fiber Systems, Inc. and the driving force behind the collocation effort, said he expects the FCC to allow competition for switched access within a year. However, a legal challenge to the order on private-line traffic would virtually assure a delay on the switched access decision.

In its order issued last week, the FCC denied that its requirement for physical collocation violates the Constitution. It maintains that the Fifth Amendment is intended to make sure that the government compensates owners for use of private property. A

(continued on page 29)

Telco details private-line guarantee

By Bob Wallace
Senior Editor

ROCHESTER, N.Y. — Rochester Telephone Corp. last week announced a service installation guarantee for users of its dedicated digital services.

Under terms of the guarantee, Rochester Telephone commits to installing its T-1 or T-45 Fiber Optic High Capacity services on or before the due date or crediting the customer's account for 100% of the onetime service installation charge.

The guarantee applies to services used for interstate, intrastate and local communications. It does not, however, apply to order charges for special construction charges or unspecified "situations beyond company control."

According to Rochester Telephone, the offering is being made to demonstrate the carrier's recognition that business customers using these specialized high-volume digital services are particularly dependent on timely installation.

26 INCHES TALL. 12 INCHES DEEP. AND OVER 2 GIGABITS WIDE.

As your network grows larger, it would be great if you could call on your hub to provide more system performance. But it doesn't always work that way.

Unless yours is an Enterprise Hub™ from Hughes LAN Systems.

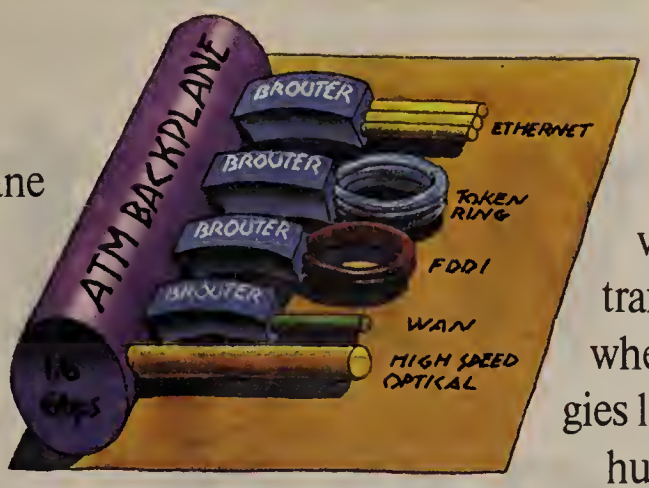
The Enterprise Hub delivers over 2 Gbps of bandwidth, making it the highest performance hub in the industry today. And a hub that will measure up to your needs as they grow.

WHAT'S THE BIG IDEA?

Getting more performance from less hardware is the idea. With over 2 Gbps of bandwidth, the Enterprise Hub makes the idea reality.

Now you can add, segment and redefine new networks on the backplane. Forget about stacking

hubs. Instead, the Enterprise Hub's segmented backplane lets you integrate and internetwork multiple Ethernet, Token Ring and FDDI LANs all within the same hub.



The Enterprise Hub's ATM Backplane architecture allows incremental expansion of your network to utilize over 2 Gbps of bandwidth.

When you want to move users around the network, there's no need to navigate your way through various wiring closets. Thanks to the Enterprise Hub, reconfiguration is easily handled from your network management station.

STEER CLEAR OF TRAFFIC.

Segmented hubs have become the network's highway system. So integrating bridges and routers within the hub makes perfect sense. However, that can result in the type of backplane traffic that resembles rush hour in L.A.

The Enterprise Hub provides an express lane to speed traffic through. Its ATM Backplane offers 1.6 Gbps of throughput. Because the ATM Backplane is cell-based, it supports high-speed switching for today's LAN traffic and as well as future networks that combine voice, video and data traffic. And when technologies like gigabit hub-to-hub links and ATM interfaces are ready, your hub's ready for them.

MORE INTELLIGENT MANAGEMENT.

There's nothing too smart about expanding your network to the point where it grows beyond your control. Here again, the Enterprise Hub is the intelligent choice.

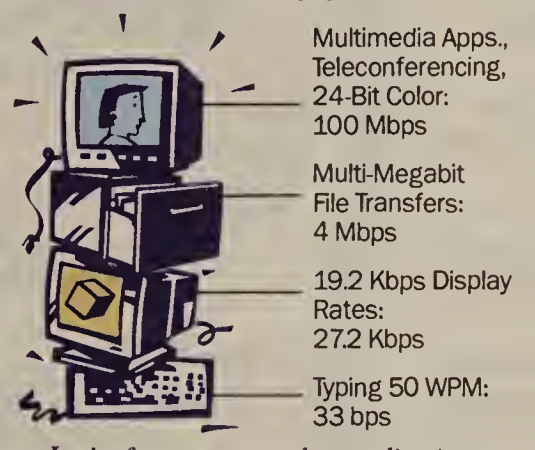
Dedicated SNMP processors reside on every module in the hub. So you always have easy access to the information you need. And every time you add a module, you also add network management processing power.

REDUNDANT. REDUNDANT. REDUNDANT.

Network managers tell us they need absolute system reliability. You'll get no argument from Hughes. Instead what you'll get are system safeguards like redundant load-sharing power supplies. Hot-swappable modules. Redundant hub-to-hub links. So while network users enjoy great performance, network managers enjoy great peace of mind.

THE BIG PICTURE.

Even if you're focused on your company's current needs, experience has taught you enterprise networking needs are unpredictable. So the hardware investments you make today should pay dividends for many years.



In the future, as complex applications demand greater bandwidth, the Enterprise Hub gives network managers the flexible architecture they need to make migration simple.

It's time to think big. Look at the Enterprise Hub's 2 Gbps bandwidth versus your typical hub's 10 or 20 Mbps. You'll find a huge difference in terms of performance. But in terms of price, you'll find the difference little to none.

Call **1-800-395-5267** for more information about the Enterprise Hub and Hughes LAN Systems' big picture networking solutions.

HUGHES LAN SYSTEMS

HUGHES

Networking & MIS Professionals:

Tell us what you need.

Falcon's selection of key products...

Falcon's Networking Team includes some of the biggest names in the business. And some of the smallest.

Because we carry a complete line of LAN, WAN, and enterprise networking products, we can quickly deliver key components your network needs.

Whether you're installing a single node on an existing network or implementing a new enterprise-wide system, Falcon is your one-stop connectivity provider.

Here are a just a few of the key vendors playing on the Falcon Networking Team:

Ungermann-Bass
Your global network integration partner

Ungermann-Bass integrates your existing hardware and software into a single manageable network that supports globally-distributed, mission-critical applications. Falcon represents Ungermann-Bass to customers in the Washington region and to the entire Federal government.

WELLFLEET communications

Wellfleet offers a family of high-performance multi-protocol routers. The Feeder, Link, Concentrator, and Backbone Nodes use Wellfleet's Advanced Communications Engine to provide multi-vendor connectivity for LANs and WANs.

NetWorth™
An Ungermann-Bass Partner

NetWorth's Series 4000 Intelligent Hub provides manageable connectivity for departmental Ethernet networks. Recently, NetWorth announced its exclusive NetWare Application Engine, providing a brand new method for centralizing NetWare communications services right in the hub.

Apple Computer

Falcon also represents manufacturers of AppleTalk products including Apple, Farallon, and Shiva.

For more information on Falcon's networking products return our coupon or call (301) 386-8590.

☐ **Yes!**

Please send me complete details on these Falcon network products...

- ☐ Ungermann-Bass Access/One networking products.
- ☐ Wellfleet routers.
- ☐ NetWorth intelligent hubs.
- ☐ Novell NetWare products.
- ☐ AppleTalk networking.

☐ **Wait!**

I need both! Please send details on Falcon's entire range of networking products & services!

☐ **Okay!**

Please send me complete details on these Falcon network services...

- ☐ Network analysis and design.
- ☐ Network installation.
- ☐ Networking training.
- ☐ Services for systems Integrators.
- ☐ Other:

☐ **Hurry!**

It's an emergency. Please call me with your latest product and pricing information.

To receive the service or information you need, please mail or fax this request to: **Falcon Network Integration**, 1100 Mercantile Lane, Landover, MD 20785. For faster service, kindly call the number below.

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Agency/Organization

Address

Mail Stop or Room Number

City State Zip

Business Phone

NWW 123

Or Falcon's networking services and training.

Whether you're an IRM professional, a systems integrator, or a non-technical manager, you know that networking almost any organization represents a tremendous opportunity.

But implementing such a network is also a tremendous challenge: it's hard to know which solutions work best together, which represent the best buy, and which are flexible enough to accommodate your future needs.

Let us help.

If you've been tasked with responding to these tough questions, the team of Falcon and its vendor partners has just what you need: complete professional assistance. Our engineers, installation professionals, and project managers make networking manageable by:

- Analyzing your current and future connectivity needs.
- Reviewing your network designs.
- Recommending proven products.
- Creating implementation strategies.
- Providing expert installation, maintenance, and training services.

It's this simple: the Falcon Team is your partner when it comes to solving your network problems. We will support you in managing your network with design, installation, project management, and maintenance services. Or, we can provide such services directly.

Return this coupon or call (301) 386-8590 for more information on products and services from the Falcon Networking Team.

Call: 301-386-8590
Fax: 301-386-6424

Falcon
Network Integration

US West launches work-at-home trial to address growing market

By Bob Wallace
Senior Editor

DENVER — US West Communications, Inc. last week detailed plans to run a 10-week trial in Utah that it hopes will enable it to determine the best ways to serve the growing home office market.

The Bell operating company kicked off the trial in Salt Lake City and Provo, Utah, on Oct. 12 and plans to wrap it up on Dec. 31, said a US West spokeswoman.

US West Communications said a post-trial evaluation of the findings will determine how the company will serve the home office market in these Utah cities as well as throughout its 14-state territory.

The BOC serves users in Utah, as well as those in Idaho, Oregon, Washington, Montana, Arizona, Wyoming, New Mexico, Colorado, Iowa, Nebraska, Minnesota, North Dakota and South Dakota.

"For a growing number of Americans, the office is a one-minute commute, right into the next room, their home offices," said Todd Nelson, a product manager with US West Communications. "These workers reach out to their markets via phone, fax and modems, and keep in touch with their clients through services like 800, call forwarding, call waiting and voice messaging."

Nelson estimates that in the next five years, the home office market will grow by 43% in US West Communications' region. LINK Resources Corp., a research firm in New York, estimates that by 1995, 44% of U.S. households and 40% of the adult work force will be involved in working at home, primarily as a part-time extension of the conventional work place.

LINK predicts that overall home office worker population growth will reach 51.3 million by 1995.

US West Communications has established a help line for use in the trial. Home office workers can call (800) 479-9675 to reach specially trained consultants who can offer telecommunications options as solutions to the workers' needs. There is no charge for the offering.

"We'll feature point-of-purchase displays in BizMart stores and host a customer seminar featuring Paul and Sarah Edwards, nationally known authors on the subject of home office workers," Nelson said. The Edwards will be conducting a course on Nov. 2 on improving effectiveness when working at home.

"Home office workers have told us they want to know what services we offer and how they can improve their bottom line," Nelson said. "These services can be as simple as call waiting or something more complex, such as a [Centrex] line, or a combination of several services."

Research conducted in Utah indicates that the state's home-based businesses are diverse, including such things as building construction contracting, cosmetics sales, financial services, hairstyling and house cleaning services.

Others include import/export operations, publications management, product manufacturing and sales, real estate brokerage, and sales and rental property management.

Is open mart constitutional?

continued from page 25

typical example is when a city government needs privately owned land for a new road.

However, in this situation, the FCC is not taking the central office away from the local carriers, the order said. The local carriers still control the site and access to all facilities. Additionally, the FCC order allows the local carriers to charge a fee to cover the cost of collocation and overhead.

Sikes supported a less stringent order that would have given the local carriers an option of either allowing rivals to physically locate equipment in the central office or locate it at a nearby site and tie it into the central office over a leased line.

But Sikes was outvoted by his colleagues, who argued that physical collocation provides superior service quality and reduces the possibility of discrimination by the local carriers.

"It's not clear to me what problems we are attempting to resolve by requiring the local exchange carriers to provide physical collocation to all interconnectors that request it," Sikes said in a written statement. "This requirement is intrusive and raises questions whether it constitutes a 'taking' or confiscation of local exchange carrier property."

(What is it?)

It's an SNA gateway. (That's nothing new.) **It's also a local router.** (Excuse me?) **It's an SNA gateway *and* a local router** (You mean in one product?) **in one product. So it provides you with two solutions in one:** (Let me guess; the functionality of a gateway along with the performance of a router.) **the functionality of a gateway combined with the high-performance of our router's SPARC processor.** (I was close.) **Since this new product** (I think it should be called a gateway-router.) **performs two functions at once, it offers unprecedented levels of administrative convenience and manageability.** (But does it access multiple LANs?) **It also accesses multiple LANs, including Token-Ring, Ethernet, and LocalTalk,** (Ask a stupid question...) **and supports mixed PC environments such as Windows, Mac, and DOS.** (Holy Toledo.) **Naturally, our Netway gateway-router** (Hey, that's *my* name for it.) **can route Novell IPX and AppleTalk protocols,** (And?) **and comes complete with powerful 3270 services like terminal and printer emulation.** (I wonder who came up with this thing.) **As you might have guessed by now, the company behind this revolutionary product is Avatar,** (I should have known.) **leaders in SNA connectivity for over a decade.** (Must be about time for the obligatory 800 number.) **For more information, and our free "Gateway-Router Guide to Network Manageability," send in the coupon or call 1-800-AVA-3270.** (A free gateway-router guide? You must have read my mind.)

Send to: Avatar, 65 South Street, Hopkinton, MA 01748-2212.

Worth Noting

"Microsoft talks about building blocks, which means someone has to put the building blocks together."

Will Fastie
Vice-president
Alex, Brown and Sons
Baltimore, Md.

Store & Forward

On Nov. 10 in Boston and Nov. 11 in San Francisco, **Sybase, Inc.** will brief analysts and the press on its overall strategy and product directions for the next year.

Sybase plans to discuss new products, including Replication Server, Data Navigator and Omni Server. The Replication Server supports distributed updates, while the Data Navigator enables users to partition Sybase's SQL Server database management system across tightly coupled servers. The Omni Server is a distributed SQL translation gateway. For more information, contact Sybase at (510) 596-3500.

IBM and **Micro Decisionware, Inc. (MDI)** have entered into an agreement in which IBM will market MDI's LAN-to-host database gateway, host database Access Servers and personal computer/SQL-link data access tool through its direct sales force.

MDI's Database Gateway software provides links between client/server applications using LAN-based SQL database servers and mainframe data sources such as IBM's DB2.

MDI's Access Servers reside on the mainframe with the target database in order to process requests sent by the Database Gateway or the PC/SQL-link access tool.

For more information, contact MDI at (303) 443-2706.

Retix joins with Novell to deliver X.400 to NetWare

X.400 capability a first for Global Messaging.

By Timothy O'Brien
West Coast Bureau Chief

SANTA MONICA, Calif. — Retix, a supplier of Open Systems Interconnection products, recently announced an agreement with Novell, Inc. to deliver the first X.400 capability to the NetWare Global Messaging environment.

Retix X.400 for NetWare Global Messaging is a NetWare Loadable Module (NLM) that will work with Novell's new X.400 Protocol Access Module, the X.400 interface for the NetWare Global Messaging environment.

"We are combining the strengths of Retix's proven OSI technology with Novell's new messaging infrastructure to provide fully integrated X.400 access for NetWare LAN users," said James Neiser, associate vice-president of the Marketing OSI Product Unit at Retix.

Since X.400 has been viewed for years as being too complex and pricey for many LAN users, Novell and other companies are making an effort to make X.400 integration more cost-justifiable.

Novell, for example, recently cut the price of NetWare Global Messaging by 70% in order to more rapidly seed accounts with the messaging platform.

Native X.400 support

In addition, Novell is teaming with vendors such as Retix to deliver native X.400 support in NetWare Global Messaging for those companies that want to access multiple messaging environments from a NetWare server.

"X.400 is an important component of the overall NetWare messaging solution," said Arvind Agrawal, vice-president and general manager of the Messaging Products Division at Novell. "Through X.400, our customers want interoperability with a wide variety of standards-based mes-

(continued on page 34)

BBN enhances document management TCP/IP pack

By Wayne Eckerson
Senior Editor

CAMBRIDGE, Mass. — BBN Systems and Technologies recently introduced Version 2.0 of its integrated office automation and multimedia communications software for Unix that offers new user interfaces and enhanced support for compound documents.

BBN/Slate is Unix software that works with X Window System software to let users exchange compound documents across Transmission Control Protocol/Internet Protocol networks, as well as simultaneously view and edit compound documents in real-time electronic conferences.

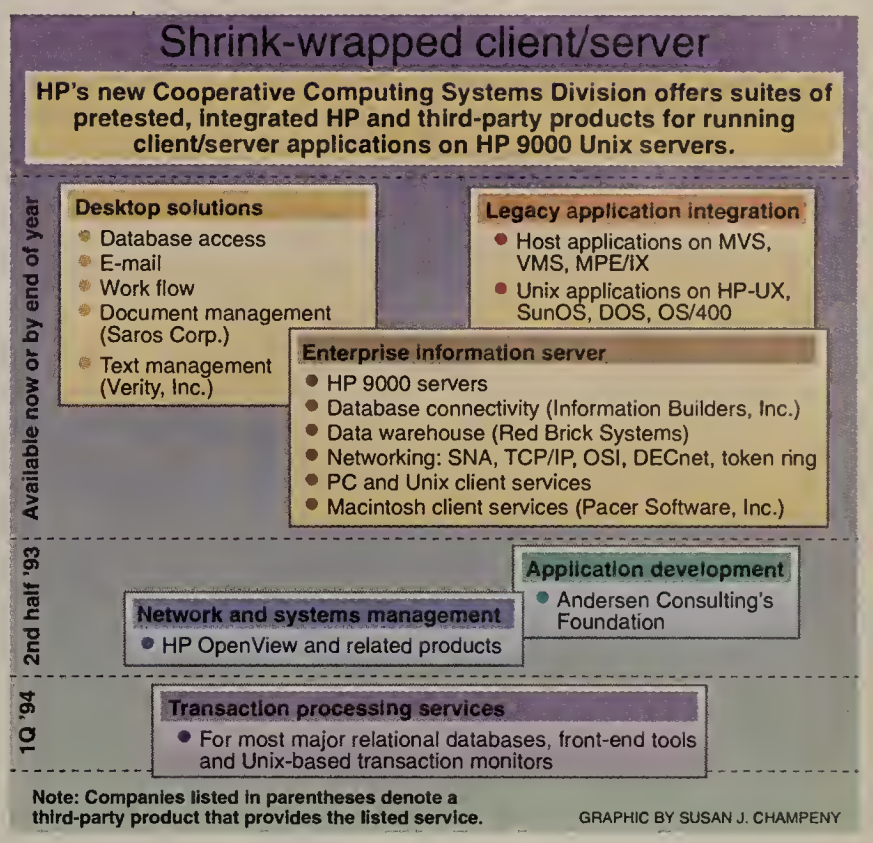
BBN/Slate runs on Sun Microsystems, Inc. SPARCstations, Hewlett-Packard Co. 700 Series Unix processors, IBM RISC System/6000 machines and Digital Equipment Corp. DECstations.

Version 2.0 gives users a choice of the Open Software Foundation, Inc.'s Motif or Sun's OpenLook user interface. Version 1.0 used a proprietary interface. The new version also provides built-in support for X Window cut-and-paste functions, a context-sensitive help system with hypermedia links to related topics and a new menu bar and ruler, which provide easier access to frequently used operations.

Version 2.0 of BBN/Slate also offers enhanced support for compound documents, including text, data, graphics, images and digitized audio. The product supports hot links to other BBN/Slate documents, as well as footnotes and flexible placement of headers and footers, and multiple column printing. It also allows users to print both vertical and horizontal pages.

Version 2.0 allows users to import documents in a variety of image formats. It also supports an enhanced scripting language that lets users tightly integrate Slate/BBN with other applications.

A license for BBN/Slate 2.0 costs $995 per seat and is available now.



HP offers integrated client/server packs

Forms new division to package products from multiple sources, test them for interoperability.

By Wayne Eckerson
Senior Editor

CUPERTINO, Calif. — Capitalizing on its expertise in open distributed computing, Hewlett-Packard Co. last week launched a new division that will provide one-stop shopping for client/server computing.

The Cooperative Computing Systems Division (CCSY) is offering a series of pretested, interoperable hardware and software products from HP and other vendors that will help large companies migrate legacy host applications to open distributed computing platforms.

All CCSY offerings are built on top of HP 9000 Unix servers, which support five areas of client/server functionality: desktop utilities, transaction processing services, Unix-to-host integration, application development, and network and systems management.

In addition, CCSY will offer consulting and systems integration services through HP and two outside systems integration firms to help customers redesign business processes and integrate CCSY client/server solutions into their existing computing environments. HP will also serve as a single point of contact for customers that have purchased HP or third-party software through CCSY.

"By providing interoperable products that are preloaded onto HP 9000 servers, HP is saving customers from having to deal with multiple HP divisions and third-party vendors," said Sridhar Ramanathan, HP product marketing manager at CCSY here. "We are trying to help Fortune 200 companies move more smoothly to distributed cooperative computing while reshaping business processes."

Ramanathan said several HP customers are pilot-testing CCSY products. He added that the names of those companies will be announced in two months.

Interoperable options

CCSY's Cooperative Computing solutions allow customers to pick and choose among 50 HP and third-party software products that HP has tested for interoperability.

The third-party vendors are Andersen Consulting, Information Builders, Inc., Pacer Software, Inc., Red Brick Systems, Saros Corp. and Verity, Inc. CCSY also has agreements with Computer Sciences Corp. and Science Applications International Corp., which will provide systems integration and consulting services.

(continued on page 34)

OS/2

A lot can depend on how you're hooked up.

It's simple.

Sharing information and resources has never been more critical. That's why you need IBM LAN Systems. Because nobody else can offer the one clear overview that IBM can.

IBM LAN Systems has a comprehensive solution that will satisfy your specific needs, whether you choose our OS/2® LAN Server or NetWare® from IBM. Whether your hardware is IBM or not. And whether you run on DOS, DOS with Windows™ or OS/2. IBM LAN Systems supports all industry-standard networking protocols, including Ethernet and Token-Ring, as well as over 4,000 server-enabled applications.

Whether you use OS/2 2.0 as a server platform or as a client, with IBM LAN Systems you'll get not only seamless integration, but also a high-performance environment that makes the most of your LAN—with multitasking that lets more data travel at once, protected by fault tolerance and security functions. So even if you go down, you're not out.

Best of all, you get IBM's unparalleled service and support. So look before you leap into a LAN. You'll feel better taking the plunge with IBM.

Introducing IBM LAN Systems.

- *Provides a comprehensive LAN solution.*
- *Choose between OS/2 LAN Server and NetWare solutions.*
- *Supports industry-standard protocols, under DOS, Windows and OS/2.*
- *Provides seamless integration and a high-performance environment.*

IBM

HP offers integrated client/server packs

continued from page 31

While most of the products in the CCSY portfolio are currently available from HP and participating vendors, CCSY will only roll out Cooperative Computing components as it guarantees the interoperability of the underlying hardware and software.

Last week, CCSY announced the availability of the base platform, the HP 9000 Enterprise Information Server, which comes bundled with a host of enterprise networking services from HP and third parties.

These include Information Builders' EDA/SQL for connecting to relational and nonrelational databases, Red Brick's data warehouse software, Pacer Software's Macintosh connectivity software, as well as HP products for software distribution and print and file management.

The Enterprise Server can be used in IBM Systems Network Architecture, Transmission Control Protocol/Internet Protocol, Open Systems Interconnection and Digital Equipment Corp. DECnet networks, as well as with several local-area network operating systems, including HP's LAN Manager for Unix and Novell, Inc.'s NetWare.

CCSY also announced the availability of integrated software suites to provide desktop utilities, such as electronic mail and data access, and Unix-to-host integration. Users will have to wait until next year for application development tools and network management software, and until 1994 for transaction processing services.

CCSY's desktop utilities — which it calls Knowledge Worker Solutions — consist of HP products that provide database access, messaging and work flow support, as well as Saros' Mezzanine and Verity's Topic. The latter two offerings provide document management, and text search and retrieval capabilities, respectively. All CCSY desktop software runs on the HP 9000 server.

HP will integrate clients with server applications on different platforms using HP Software Integration for Sockets, a middleware product that provides peer-to-peer communications among applications running on MVS, VMS, OS/400, HP-UX, MPE/iX, SunOS and DOS platforms.

HP's OpenView and related products will constitute the bulk of CCSY's network and systems management service.

On the application development side, CCSY is working with Andersen Consulting to port its Foundation computer-aided software engineering tool to the HP 9000 platform. Foundation will enable customers to design and develop client/server applications using the HP 9000 as a repository for methods and class libraries.

On-line transaction processing services will be bundled into CCSY using existing HP and third-party tools. These transaction services will work with Unix-based relational databases from Informix, Inc., Ingres Corp., Oracle Corp. and Sybase, Inc., among others.

Retix joins Novell to deliver X.400

continued from page 31

saging systems and public data network mail services."

Specifically, Retix X.400 is targeted at NetWare users that want to utilize NetWare Global Messaging's X.25 wide-area interface to access X.400 services and those that want to use X.400 to interoperate with other platforms through direct LAN connections.

Retix X.400 for NetWare Global Messaging consists of an X.400 NLM, which includes a customized version of the Retix X.400 libraries; Novell's X.400 Protocol Access Module, which includes the Novell LAN/WAN transports and configuration utilities; and a NetWare Global messaging administration utility that has a consistent user interface to NetWare administration utilities.

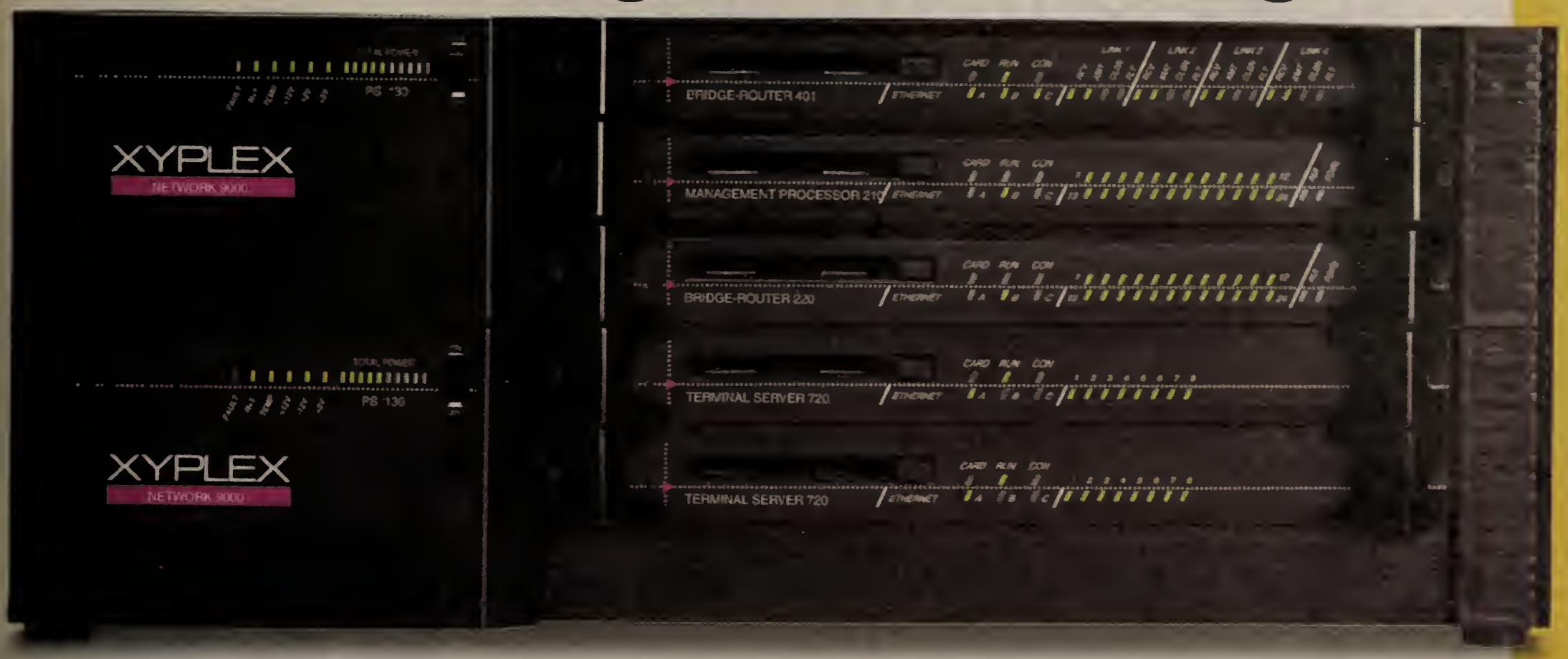
As the first X.400 NLM and the first X.400 product to be natively integrated into NetWare Global Messaging, Retix claims that its multitasking X.400 NetWare solution will allow users to handle higher volume messaging requirements and provide greater throughput and performance than other X.400 systems working through a gateway.

Lower cost

In addition, by using NetWare Global Messaging as the messaging switch, the cost of X.400 is reduced because the cost of a gateway is not incurred; a single machine can support NetWare and the X.400 messaging facilities.

The new product will be packaged by Retix in a Novell-endorsed "red box" and marketed by Retix through Novell's channel of authorized resellers and distributors. Retix X.400 for NetWare Global Messaging is priced at $6,995 and will be available in the first quarter of 1993.

Intra-ducing intra-networking.



Xyplex seamlessly integrates routing, switching and communications server technologies in a whole new kind of hub.

Presenting the Xyplex Network 9000. We call it an intra-networking hub, and it completely redefines hub technology. How? Consider this: the Network 9000 allows you to attach a 10Base-T concentrator directly to a bridge/router module to create a new network segment in a single slot.

Capabilities like this are possible with our unique Multi-Media Midplane architecture that separates processor and I/O functions onto individual modules that connect at the Midplane. These modules can also be software switched on the Midplane among their appropriate segments. The Midplane supports multiple Ethernet, Token Ring and FDDI segments. Plus, the Network 9000 is from Xyplex, a company with 10 years of experience providing networking solutions for some of the world's largest corporations.

Thanks to intra-networking, Xyplex hubs give you flexibility to meet your changing needs. To learn more, just call 1-800-338-5316 or send us your name and address. We'll send you our new booklet *The Intra-networking Advantage*. You'll learn how Xyplex brought together seamless integration in a single chassis.

And why you should intra-duce yourself to intra-networking.

Intra-duce me.

Please rush me my free copy of *The Intra-networking Advantage*.

Name

Title Company

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City State ZIP

( )
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Or fax to (508) 264-9930.

Or call 1 800 338 5316.

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NetWorld 93.
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On January 12-14, the biggest connectivity jam session this side of the Atlantic swings into Boston. NetWorld 93 tops the charts as the computer industry's #1 networked computing trade show and conference. Regarded as the industry's blockbuster networking and internetworking event of the year, NetWorld showcases the latest software releases and hardware breakthroughs — all designed to help you determine the future of networking. It's the one show where your business initiatives and the industry's technological advances meet for long-term success.

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So, if it's hardware oldies, today's networking rap or a new generation of communications products you're looking for — NetWorld's top networking brass are on hand to help you discover and master it all.

For additional show information, or to reserve your exhibition space, contact Show Manager Jodi Levine at 800-829-3976 or 201-346-1400 (x143); FAX 201-346-1602. For hotel and travel arrangements, contact All Conference Travel at 800-829-2281 or 201-346-0300.

NETWORLD® 93 BOSTON

The Universal Communications Network

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Worth Noting

Fueled by the popularity of portable computers, pocket-sized modem sales will boom from $146 million in 1991 to $887 million by 1998, according to a recent study from Market Intelligence Research Corp. in Mountain View, Calif.

People & Positions

Network General Corp., a Menlo Park, Calif., network analyzer vendor, has appointed two new senior managers.

Peter Boot has been named vice-president of international operations. He will be responsible for increasing Network General's presence in the international arena, establishing closer ties with international users and distributors. Boot was most recently with Ashton-Tate Corp., where he was vice-president and general manager of the international division.

Carl Goldman has been named vice-president of MIS and manufacturing for Network General. He will be responsible for streamlining the company's manufacturing processes and overseeing the design of major business application systems, among other things.

Previously, he was vice-president of finance and information systems, as well as chief financial officer, at Hughes LAN Systems, Inc.

Teleos Communications, Inc., an Eatontown, N.J., vendor of bandwidth management devices, has named **Jim Flach** as its chairman. Flach previously was vice-president and general

(continued on page 38)

OMNIPoint unveils procurement guides

Users' guide, published by Prentice Hall, Inc.	Cost
• "Discovering OMNIPoint"	$26
Technical specifications, published by Phillips Publishing	
• "Forum Specifications"	$800
• "OMNIPoint Partner"	$800
• OMNIPoint 1 ISO standards	$2,007
The OMNIPoint object definitions library Annual subscription to the OMNIPoint library includes paper or electronic diskette plus quarterly electronic updates of object definitions	$630

For information on purchasing the OMNIPoint 1 publications, call the NM Forum at (908) 766-1544.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: NETWORK MANAGEMENT FORUM, BERNARDSVILLE, N.J.

Forum unveils OMNIPoint guide and specifications

Attempts to clear up technology for end users.

By Ellen Messmer
Senior Correspondent

BERNARDSVILLE, N.J. — The Network Management (NM) Forum last week announced the availability of a buyers' handbook and technical documents to help users evaluate network management products based on the Open Management Interoperability Point 1 (OMNIPoint 1) specification.

That specification melds the Open Systems Interconnection Common Management Information Protocol with the Transmission Control Protocol/Internet Protocol community's Simple Network Management Protocol and the X/Open Company, Ltd.'s Management Protocol (XMP). XMP blends CMIP and SNMP with X/Open-defined directory services and object management services.

NM Forum's "Discovering OMNIPoint" guide defines OMNIPoint 1 terminology in depth so users can write requests for proposal that will be precisely understood by OMNIPoint product suppliers.

The guide contains two separate sections — one focusing on users and the other on suppliers. The procurement guide section is intended to help users buy products, while the developers' guide discusses implementation choices, identifying which OMNIPoint requirements pertain to each of several product types.

"The biggest win with the document is it allows the end user to provide a precise statement of functionality," said John Paine, a communications architect at DHL Worldwide Express.

He pointed out that the guide should also be useful to vendors backing OMNIPoint since marketing staffs have at times seemed to be largely unaware of what OMNIPoint is.

The guide costs $26 and is available in major retail outlets or directly from the forum (see graphic, this page).

NM Forum also announced the availability of three sets of technical specifications offering an encyclopedic mass of information related to the OMNIPoint program.

The "Forum Specifications" document contains the specifications and technical reports produced by the forum.

"OMNIPoint Partners" contains additional documentation from the wide range of organizations backing the specification. Among the roughly 20 organizations are the National Institute of Standards and Technology, the Open Software Foundation, Inc., the British government agency CCTA and the Interoperability Technology Association for Information Processing in Japan.

ISO standards set

Finally, NM Forum is offering the formal International Standards Organization standards referenced in OMNIPoint as a collected set, as well.

The forum is also providing a central repository to register object definitions — the descriptions of network devices and services — for the OMNIPoint network management specification. The forum is offering this information to users and vendors on an annual subscription basis since more objects will be added in the future.

FileNet teams with firms to boost image

Links with CDRS for disaster recovery service, joins with Walker to integrate software with apps.

By Bob Brown
Senior Editor

COSTA MESA, Calif. — FileNet Corp., a vendor of document-image processing and management systems, has announced partnerships with Comdisco Disaster Recovery Services (CDRS) and Walker Interactive Systems.

The agreement with Walker calls for the companies to integrate and market their respective product lines, while the CDRS deal will enable FileNet to provide customers with a disaster recovery option.

FileNet sells a client/server-based image processing system that consists of scanning, printing and storage hardware as well as FileNet's WorkFlo Business System communications software.

"These agreements are indicative of a shift in our marketing strategy toward becoming more of a software and services provider," said Jordan Libit, vice-president of marketing at FileNet. The company used to have a stronger hardware orientation, he said.

The FileNet-CDRS relationship will enable users to access a FileNet system at a CDRS disaster recovery center so they can continue using their image processing applications if their on-site network goes down. CDRS, a subsidiary of Rosemont, Ill.-based Comdisco, Inc., runs a network of nine recovery centers in North America that customers can use to back up their computers and networks.

In the event of a disaster, FileNet users will need to bring the optical disks holding their image data, as well as tape backups of databases indexing that data, to a CDRS site and load it onto a FileNet system there, said Al Plate, director of work-area recovery services for CDRS. The users could then access the data via personal computers or workstations either at that site or another CDRS site linked by the CDRS network.

CDRS plans to have a FileNet

(continued on page 38)

NET FINANCIALS

Banyan on the up and up. Banyan Systems, Inc. reported revenue of $28.3 million for the third quarter, ended Sept. 30, up from $24.9 million for the same quarter in 1991. Earnings for the quarter were $1.85 million, up from $662,000 for the same period last year. For the nine months that ended Sept. 30, Banyan reported revenue of $82.9 million, compared to $72.9 million for the corresponding period last year.

AT&T posts improved financials. AT&T reported third-quarter revenue of $16.8 billion, up from $15.6 billion in the third quarter last year. Quarterly net income was $963 million, compared with a loss of $1.8 billion for third-quarter 1991, when the company took a $4.8 billion restructuring charge. AT&T said growth in 800 services contributed to a 6% increase in its long-distance volume for the 1992 third quarter.

PictureTel shows solid 3Q. Videoconferencing system vendor PictureTel Corp. of Danvers, Mass., posted third-quarter revenue of $36 million, up 63% from the similar period last year. Earnings were $1.9 million, a small improvement over the $1.8 million posted in last year's third quarter.

Sprint earnings rise. Sprint Corp. of Kansas City, Mo., reported third-quarter earnings of $109.6 million, up 13%

(continued on page 38)

Net Financials

continued from page 37

compared to 1991 third-quarter earnings. Revenue grew slightly from $2.21 billion to $2.33 billion. Sprint's long-haul earnings were $94 million for the third quarter, more than double earnings in the second quarter and up about 4.5% over 1991 third-quarter earnings of $90 million.

VMX doubles quarterly earnings. VMX, Inc., a San Jose, Calif., voice processing equipment and software firm, posted revenue of $19.5 million for the quarter, up 17% from the first quarter last year. Earnings for the 1993 fiscal quarter, ended Sept. 30, were $1.2 million, nearly double first-quarter earnings last year.

Wellfleet revenue rises. Wellfleet Communications, Inc., a Bedford, Mass., router vendor, reported revenue of $32.8 million for its first 1993 fiscal quarter, ended Sept. 30. That figure more than doubles the revenue for its first quarter last year. Earnings were $4.9 million, up nearly 80% over last year.

FileNet teams with firms to boost image

continued from page 37

system featuring five servers installed at its Wood Dale, Ill., facility by January and expects to begin customer testing in the first quarter of 1993. Additional installations will be added based on demand.

The service will be jointly marketed by the companies and available as a standalone offering or as part of broader CDRS backup services.

A subscription to the service will cost approximately $3,200 a month, depending on configuration, according to Plate.

Application partner

FileNet's deal with Walker is one of the first under its new Applications Solutions Provider program. Under this program, FileNet is working with other vendors to integrate its software with various application packages, Libit said.

Walker is a San Francisco-based vendor of business and financial programs, such as accounts-payable applications, designed mainly for IBM mainframes. Like many other vendors, however, Walker is looking toward the client/server market, which makes its partnership with FileNet a good fit, Libit said.

The companies will work to couple their offerings so that a user, for example, could look at the image of a supplier's invoice stored on the FileNet system while also accessing data about what was actually ordered via the Walker mainframe-based software.

Libit said he expects that the FileNet-Walker relationship will start bearing fruit by the end of 1993.

People & Positions

continued from page 37

manager of Intel Corp.'s personal computer enhancement operations. He replaces **Charlie Bass,** who will retain his seat on the board of directors.

VideoTelecom Corp., a videoconferencing equipment maker in Austin, Texas, recently announced additions to its management team. **Clayton Reed,** formerly president of Delta Resource Associates, Inc., has joined VideoTelecom as senior vice-president of sales and marketing. **Robert Swem,** formerly director of manufacturing at Tandem Computers, Inc., has joined as vice-president of manufacturing.

Cayman Systems, Inc., a Cambridge, Mass.-based manufacturer of AppleTalk internetworking products, also announced management additions. **Bradley Noblet,** formerly general manager at the Andover, Mass., operations of Ungermann-Bass, Inc., has joined Cayman as vice-president of engineering. **Mark Bannon,** formerly Northeast district manager with Banyan Systems, Inc., has been named vice-president of sales and technical services.

Edward Snyder has been named president and chief executive officer of **Pro-Tools, Inc.,** a Beaverton, Ore.-based maker of network diagnostic equipment and protocol analysis tools. Synder, formerly president and CEO of Alantec, replaces **Frank Costa.** Costa will retain his seat on ProTool's board of directors.

Bell Atlantic Mobile Systems, Inc. has appointed **Michael Franklin,** formerly director of product management for network services, to the newly created position of director of product management data. As the head of a new group, Franklin will focus exclusively on the development and implementation of wireless data applications at Bell Atlantic Mobile Systems.

Worth Noting

"Networking excellence has come into its own as a critical aspect of effectiveness and competitiveness for businesses around the world."

John White
President
Information Technology Group
Texas Instruments, Inc.
Dallas
An excerpt from the keynote address at NetWorld 92 Dallas

Manager Minutes

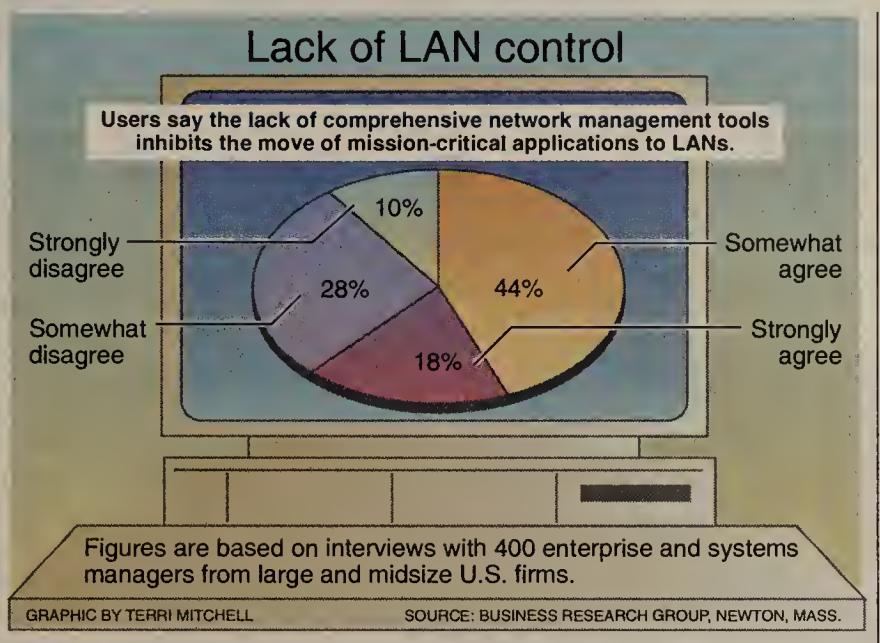
The Electronic Data Interchange Association (EDIA) and the Electronic Data Interchange Council of Canada have announced they will jointly host a Pan-American EDI Users Conference next year instead of holding separate conferences.

The combined meet is intended to help users better respond to the challenges of economic coalitions formed in Europe and the Asia-Pacific areas, the groups said. By combining the resources of both EDI councils, the conference should help members focus on developing effective business strategies for competing in a global economy, they said.

The first Pan-American meet is scheduled for Nov. 8-10, 1993, in Orlando, Fla. The joint conference will be supplemented by shorter, interest-specific regional forums.

In preparation for the conference, the groups have issued a call for speakers from the EDI community to share their expertise and experience in implementing the technology. Those wishing to participate should contact EDIA by March 31, 1993.

For more information, call (703) 838-8042.



Users taking cautious steps to client/server architecture

Many are evaluating options, awaiting products.

By Joanne Cummings
Senior Writer

Users are finding the move to client/server applications a slow yet inevitable process.

Although companies expect to develop or install client/server applications in the near future to gain cost efficiencies and flexibility, most are still evaluating applications or waiting for off-the-shelf products.

"We're in our infancy with client/server, and I think a lot of people are," said David Batz, an information systems analyst at Wisconsin Power and Light Co. in Madison, Wis. "We know that's the direction we need to go because the price per [million instructions per second] is significantly lower on the desktop, but we're just kind of on the edge of doing it."

Batz said his company, which has 50 sites spread across two states, is evaluating a move from an IBM Systems Network Architecture terminal-to-host setup to a client/server architecture based on internetworked local-area networks. He said the company plans to distribute its mainframe-based information to the LANs to save money and ease access to the firm's client database.

"The goal is to make our customer data available to the entire corporation and not just this department or that department," Batz said.

Wisconsin Power and Light's terminal-to-host net offers access to corporate data, but it is not as seamless as Batz would like. "Client/server would make the integration tighter, and it would save the cost of the mainframe MIPS," he said. "But right now, we've just started to figure out how to handle the wide-area net to distribute this information."

Other users said they know they need client/server applications but are waiting for vendors to develop them.

According to George Shannon, a statistical data analyst at Washington University Medical School in St. Louis, client/server applications tailored to the school's needs are not available yet. His group, which does medical research on people who are chemically dependent, relies on grant money to operate and cannot afford to sink money into application development, he said.

"I think moving to client/server boils down to one basic issue for us," he said. "If you're doing something that's relatively straightforward, like data entry, you want to make it as simple as possible, and client/server is probably the way to go" because it can be used to automate tasks.

"We're in our infancy with client/server, and I think a lot of people are."

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(continued on page 40)

MANAGING TECHNOLOGY

BY DAVID FERRIS

A closer look at SystemView

IBM announced its SystemView framework in September 1990 in an effort to offer a single network and systems management architecture for application vendors and users.

In theory, SystemView is supposed to provide a common way for users to access and control disparate applications running on a range of computing platforms. In practice, however, it has yet to live up to its promise.

SystemView has three major components. The first, the End Use Dimension, defines a common look and feel for applications and is based on IBM's Common User Access style guide. It requires that personal computer applications use OS/2 and Presentation Manager, and optional application development tools — such as IBM's ScreenView, which manipulates windows — are also included.

The second component, the Data Dimension, defines a common set of data structures and the application program interfaces (API) used to access them. This enables one application to use data prepared by another.

The Data Dimension comprises the data model, which contains data definitions; the enterprise information base, which contains administration data; and control information bases, which contain coordination data (such as measurements against a threshold) and control data (such as rules for starting and stopping a printer).

The third component, the Application Dimension, divides system and network management functions into six categories of management: configuration, performance, problem, operations, change and business, including tasks such as inventory control, financial management and business planning.

In part, the Application Dimension helps organize the mass of network management tasks into digestible categories, guiding vendors on how to describe their applications. As SystemView develops, IBM plans to produce detailed specifications for what the various tasks do, their data structures and APIs.

But today, the Application Dimension is poorly defined. What's available deals with automatic control of mainframes and the Systems Network Architecture network. However, IBM does have plans to incorporate other technology into SystemView, including a series of models defined by IBM's new LANfocus Management/2 family of network management products.

Going Unix?

From the outset, SystemView was intended to apply to IBM's main machines — PCs, the Application System/400 and mainframes. Unix machines were seen as important but separate platforms with which SystemView products would interoperate.

But now, SystemView is being expanded to include technologies from the Unix world. Both the Simple Network Management Protocol and the Common Management Information Protocol (CMIP) are now allowed, as is their X/Open Company, Ltd. Management Protocol (XMP) API and the Open Software Foundation, Inc.'s Motif user interface.

Last month, IBM announced LANfocus Management/2 as part of SystemView. This runs under OS/2 and allows different network management applications to work together. IBM will also sell several network management applications that run under LANfocus.

LANfocus uses SNMP, CMIP

(continued on page 40)

A closer look at SystemView

continued from page 39

and the XMP API. It's due for release in the second quarter of 1993, and a number of network management vendors have agreed to deliver applications to work with it.

IBM is also pushing its SystemView NetView/6000 network management package. This is a stand-alone manager for SNMP environments that runs on IBM's RISC System/6000, uses Motif and the X Window System, and supports XMP. Despite its similar nomenclature, NetView/6000's only connection to mainframe NetView is that it can exchange information with mainframe NetView using LU 6.2.

More specs needed

One problem for SystemView is that it needs more concrete specifications and guidelines. But the picture should become a lot clearer in December, after IBM formally publishes the detailed definitions to some 150 managed objects.

Mainframe network and system management vendors have active plans to support SystemView. They have to live with NetView, and, naturally, they're interested in its future direction. Down in the world of PCs and Unix workstations, though, there's a lot of interest in LANfocus and NetView/6000.

One interpretation of this interest is that SystemView is really catching on in the distributed computing world. Another view — one held by the author — is that IBM's distributed computing technology is what's gathering momentum. Vendors aren't interested in SystemView. What grabs their attention is the fact that IBM is now supporting SNMP, CMIP and Unix through the RS/6000.

It's also doubtful whether IBM is really serious about integrating products such as NetView/6000 and LANfocus into SNA and mainframe management. Will it really let the SNA network and mainframe environment be controlled from a Unix workstation? For example, IBM has not announced plans to provide XMP support for NetView.

On the other hand, SystemView's object definitions may make a valuable contribution to network management.

Today's standards discuss low-level objects such as packets and transmission paths. Network managers also need standard definitions for application-level items, such as programs, computers and printer queues.

It's a mammoth task to prepare these specifications. If IBM has built good definitions for important high-level objects, these could rapidly be adopted by the industry at large and might just become the best of what SystemView has to offer.

Ferris is president of San Francisco-based Ferris Networks, which offers newsletters, research reports, conferences, seminars and consulting on PC networking.

Users taking cautious steps to client/server

continued from page 39

Graduate students at the school, for example, conduct field surveys, and Shannon teaches them how to use the File Transfer Protocol and Telnet to upload and download the data from their personal computers to a Sun Microsystems, Inc. SPARCstation that performs statistical computations and acts as a data repository.

"The biggest issue is to make it easy for somebody to do simple things like data entry," Shannon said. "So put the simple things on the client. The upload and download would just be something that happens on the back end, and you wouldn't even see it happening or where it's going. You store the screen, and it's gone."

Others say they plan to move to client/server once the proper management solutions are available.

"There's a radical difference from mainframe environments, where you can get detailed information on a process, application or the system itself, and client/server environments," said Sam Shuler, communications strategy manager at Texas Instruments, Inc. in Plano, Texas. "The challenge in client/server is being able to get the same or equivalent information. We're not there yet, although there's lots of good work being done in the industry."

Shuler says there are several reasons to move to client/server, not the least of which is cost savings and compressing cycle times for data-intensive jobs.

"But this isn't a journey to be taken lightly," he said. "It means rearchitecting the applications completely, and I think additional work is required. There are tools and parts available today to manage client/server, but a product that integrates and simplistically glues those tools together is not yet here."

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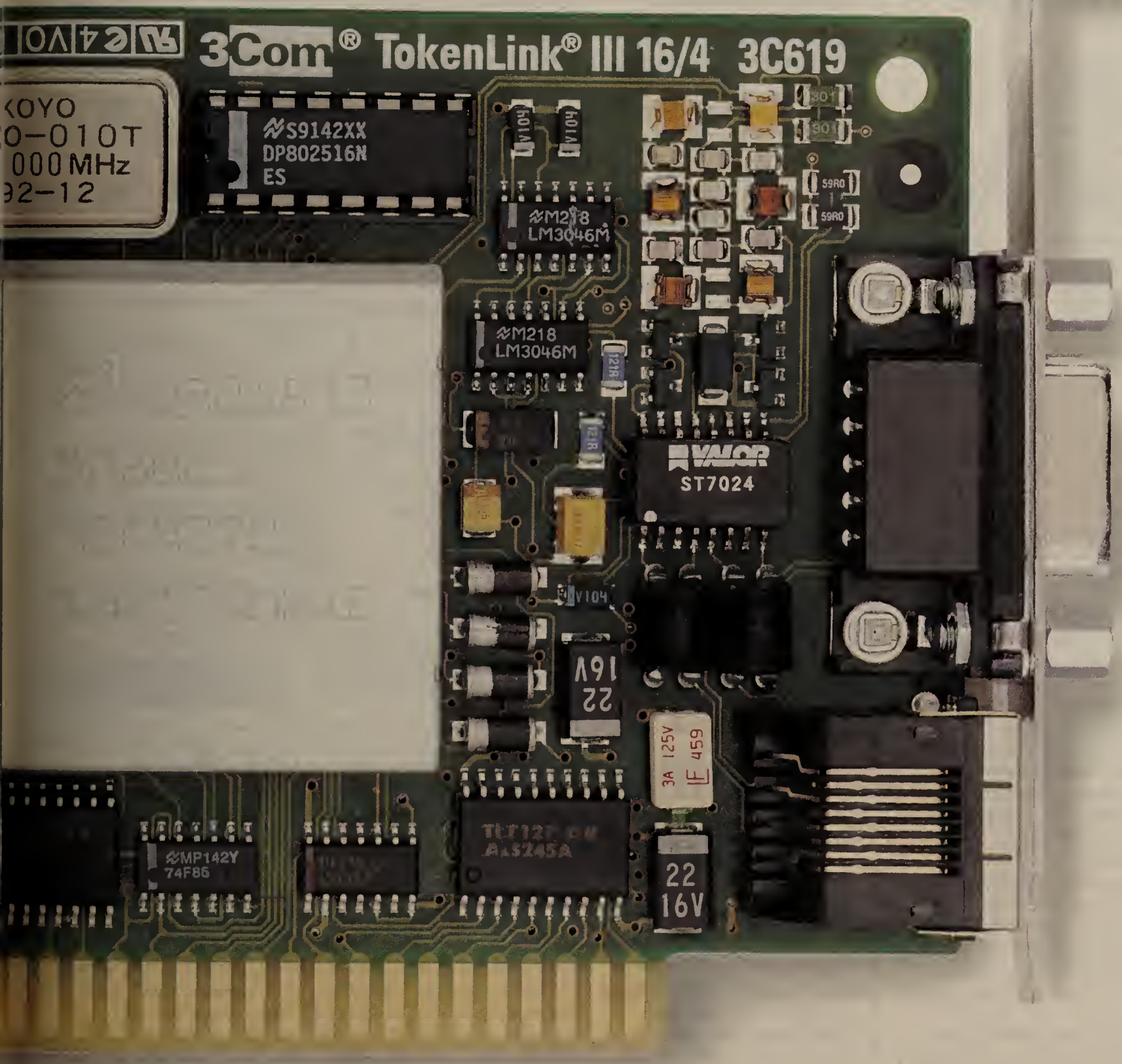

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PUBLIC NETWORKS

BY TOM FERMAZIN

Demands for service quality are being heard

Carriers are indeed hearing user demands for improved service quality. They are spending a good deal of time and money to come up with measurable levels of network performance and dependability to the benefit of users.

They are providing information about net outages to the Federal Communications Commission's Network Reliability Council (NRC), which is helping users gauge service levels. Currently, carriers report outages that involve 50,000 lines or more. During an 87-day period last spring and early summer, the NRC was told of 37 such outages. This is a good start, but users need to hear about the many more outages carriers experience that affect fewer than 50,000 lines.

The TCA is calling for the FCC to adopt industrywide quality standards.

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The Tele-Communications Association, Inc. (TCA) is pushing a proposal that would require carriers to provide additional information and is calling for the FCC to adopt industrywide quality standards and a set of parameters for measuring quality. Carriers would be required to report how well their services meet those parameters, enabling users to easily compare carriers.

While the NRC gathers outage reports and the FCC mulls the need for standard service-quality measurements, some carriers are talking up their internal quality programs.

At MCI Communications Corp., an independent testing firm is hired once a year to rate industrywide line quality, says George Roll, vice-president of quality for MCI. The test firm orders three lines from each of the three major carriers and places thousands of calls over the nine lines to two different destinations in each of the 14 cities tested. Each call is rated subjectively on a four-point scale, and such factors as noise, echo, cross talk and distortion are noted.

This information helps MCI improve quality. In 1986, the first year of the subjective testing, calls over MCI circuits received a mean score of 3.09. By 1991, it jumped to 3.77.

MCI also performs quarterly objective circuit tests in which engineers measure post-dial delay, connectivity and noise by placing more than 40,000 calls in the U.S. and 35 other countries.

AT&T, too, has a quality program, says Frank Ianna, chief quality officer for AT&T. Using its third-generation call routing system, Real-Time Network Routing, AT&T constantly updates information on the best routes calls can take through the net.

Last June, the airfare pricing war produced the five highest days of calls ever handled by AT&T. On June 1, the network handled 177.6 million calls, blocking only 2,078 of them.

AT&T also tries to improve service quality by using Fast Automatic Restoration (FASTAR), which senses circuit outages and automatically reroutes traffic around a break. A fiber-optic cable cut in Hilliard, Fla., last March affected more than 200 T-3 circuits. FASTAR restored more than half of the circuits within eight minutes and another 50 within 15 minutes.

Carriers are indeed on the right track and must strive to give users even more tools for improving service quality.

Fermazin is a free-lance writer based in Chicago.

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EDITORIAL

A modest proposal for a 'distributed' America

Tomorrow being election day, we offer a modest proposal for improving the American political process with an intelligent application of technology.

With a tip of the hat to Jerry Brown and Ross Perot — those grass-roots proponents of toll-free campaigning, video stumping and the on-line referendum — we suggest the distributed Congress.

Consider Congress in terms of a computing model: It is decidedly centralized. All decisions are made within the Beltway, akin to the glasshouse. Those who control the political machinery are distant from their constituents, akin to end users.

We need to rearchitect the political computing model with a shift to distributed politics.

Under our plan, Capitol Hill would be shut down or turned to some useful purpose, such as providing day care. Senators and representatives would get new digs smack-dab in highly visible locales, say, the biggest shopping malls in their districts.

There, the populace could keep an eye on its servants as they rise to orate and cast their votes during congressional sessions carried via videoconference. Absenteeism and specious "fact-finding" missions would be diminished — there'd be no hiding the empty desk in the food pavilion. Behind-closed-doors power brokering would also be slashed, and representatives would be out of the easy reach of high-paid special interest purveyors. (The travel costs these special interest purveyors would incur in trying to influence more than 500 dispersed politicians would be a boon to the economy in itself.)

What would it cost to distribute Congress? Surely, the high-technology industry would provide the tools needed to make this plan a reality at no cost, if only in the hope that a distributed Congress would finally be forced to deal with the deficit and mend its spendthrift ways.

If all this sounds a bit farfetched, we urge you to consider a more realistic option: Take time tomorrow to vote — the ultimate exercise of distributed power. Your choices not only affect the future of the high-technology industry, but the rest of America, as well.

DISTRIBUTED COMPUTING

BY JOHN RYMER

Hoping vendors do the right thing with automated licensing

We're on the verge of a revolution in the way software is licensed that could benefit both users and vendors.

Vendors are developing automated licensing server software that tracks application usage in a distributed environment and addresses a fundamental problem in networked environments. When an application is stored on a network server, it can be downloaded by many end users — whether or not each of them has paid a license fee. This has led to license abuse — intentional or not — as the software tends to be downloaded by more users than have been licensed.

Hard facts about the extent of this abuse are difficult to come by, but everyone agrees something has to be done.

Implemented correctly, automated licensing servers ensure that software vendors will get paid properly for their intellectual property. For users, properly implemented automated licensing servers mean they no longer have to fear vendor legal action for license violations. Likewise, users will take a closer look at how software licenses are deployed in their organizations, knowing that vendors will be better able to track usage.

Automated licensing servers give vendors a flexible model for distributing software. Under current licensing models, users pay a fixed license fee that entitles them to use the software. That fee is the same even if others use the software.

Software vendors have tried a variety of variations on standard shrink-wrap and single-user licensing — principally, site licensing — to deal with this situation. Automated licensing servers are the latest twist.

Automated licensing servers run on a server and contain information about the vendor's software licensing policy. At a base level, the automated licensing server is configured to know how many users can simultaneously have a copy of an application running on their workstation and prohibits more users from downloading a copy of the application once the maximum number has been reached.

> Automated licensing servers give vendors a flexible model for distributing software.
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An automated licensing server can also track the number of hours an application is in use during a given time period — say, a week. A license could then entitle users to a set number of hours of usage per week with an additional fee for any overage.

Automated licensing servers are available from a number of sources, including Cambridge, Mass.-based Open Software Foundation, Inc. and Hudson, Mass.-based Gradient Technologies, Inc. In addition, Microsoft Corp. and Hewlett-Packard Co. have begun fashioning an application program interface that will give software vendors a standard way to invoke licensing services from within their software.

Whether vendors cash in on the benefits of automated licensing servers depends on how the capability is introduced to users. If vendors roll out licensing servers along with draconian policies, users will rebel.

This is because the typical user organization only has a sketchy understanding of which applications are being used and how they are being used within departments, which can easily lead to the unintentional overuse of a license. This can result in an awkard situation between the vendor and user if an automated licensing server is used.

Put yourself in the following situation: Your primary software vendor requires you to start using an automated licensing server, which begins to report that 10% more users than your license covers are routinely using the software. A month later, you receive a whopping bill for the additional usage.

This scenario was played out recently with a number of the customers of a large workstation software vendor. The customers felt that the vendor used its automated licensing server to bushwhack them. Some are refusing to pay the extra charges.

This is an example of how not to implement network licensing. It would be better to give users a grace period during which they can decide to buy more licenses or restructure existing ones.

The benefits of automated licensing servers for both users and vendors are compelling. But achieving them will require vendors to take the long view — at the expense of some short-term revenue gains. If vendors take the narrow view that users have been getting away with licensing murder for years and must now suffer the consequences, users will surely rebel. Let's hope vendors do the right thing with this new technology.

Rymer is vice-president of the Patricia Seybold Group in Boston and editor in chief of the Distributed Computing Monitor.

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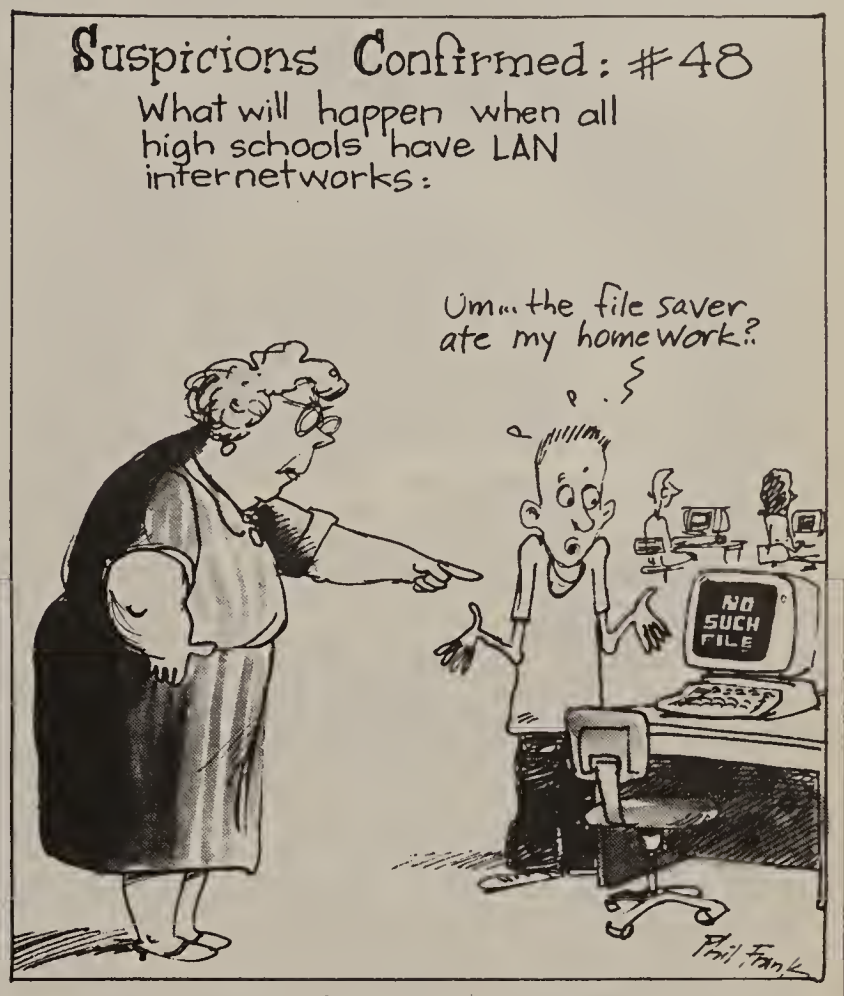
TELETOONS

BY FRANK AND TROISE



LETTERS

What about Perot?

As a professional communicator with clients in the high-technology arena, I was interested to read Ellen Messmer's article on the presidential campaign ("Ballot battle to influence course of network industry," *NW,* Oct. 19).

The article expresses the confusion and apprehension most of us feel about the upcoming election — namely, which candidate has the right policies to take high-technology and other businesses into the future.

As was cited in the accompanying article listing which candidate is supported by which top technology company executives ("Bush gains cadre of CEO support"), the choice for president is hardly cut-and-dry.

The only criticism I have to offer on the article, which I am sure required much research and a long lead time, is that it did not include information on where Ross Perot stands on these issues.

Thanks for reporting on such a tough issue and being objective about the concerns at hand. It was good reporting, and I appreciated the information.

Susan Bruder
Account executive
Adams Sandler, Inc.
Rockville, Md.

Editor's note: Ms. Messmer contacted the Perot campaign to obtain the candidate's position on the issues covered in the article. Following publication of the article, the Perot campaign responded to her request by saying no one on staff was qualified to provide answers to her questions, and it remains unclear what position Perot has on these issues.

Want to respond to an article or opinion in Network World? *Mail typed letters to Editor,* Network World, *161 Worcester Road, Framingham, Mass. 01701, or fax them to (508) 820-3467. Transmit your response via MCI Mail at 390-4868 or to our Bulletin Board System. (See page 2 for BBS instructions.) Letters may be edited for space and clarity.*

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Network World salutes the winners of the 1992 Enterprise Technology Awards. The thousands of Network World readers who cast ballots in this year's ETA voting chose these suppliers from among hundreds of vendors as their key partners in the development of enterprise networks. ETA winners were honored by the toughest judges - users themselves - for providing technology that excels in multivendor, enterprise networks. Congratulations, ETA winners.

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- Bridges . . . . . **3Com Corp.**
- Routers . . . . . **cisco Systems**
- Intelligent hubs . . . . . **SynOptics Communications, Inc.**
- LAN diagnostic/management tools . . . **Novell, Inc.**
- LAN servers . . . . . **Compaq Computer Corp.**
- Superservers . . . . . **Compaq Computer Corp.**
- Network Operating Systems . . . . . **Novell, Inc.**
- Peer-to-Peer Network Operating Systems . . . . . **Novell, Inc.**
- Wireless LANs . . . . . **Motorola, Inc.**
- Apple Connectivity products . . . . . **Novell, Inc.**

SOFTWARE

- Data Base Management Systems
  - LAN-based . . . . . **Borland International, Inc.**
  - Minicomputer-based . . . . . **Oracle Corp.**
  - Mainframe-based . . . . . **IBM**
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WIDE-AREA NETWORKS/EQUIPMENT

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- 800 Services . . . . . **AT&T**
- Frame Relay Services . . . . . **AT&T**
- ISDN Services . . . . . **AT&T**
- Switched Digital Services . . . . . **AT&T**
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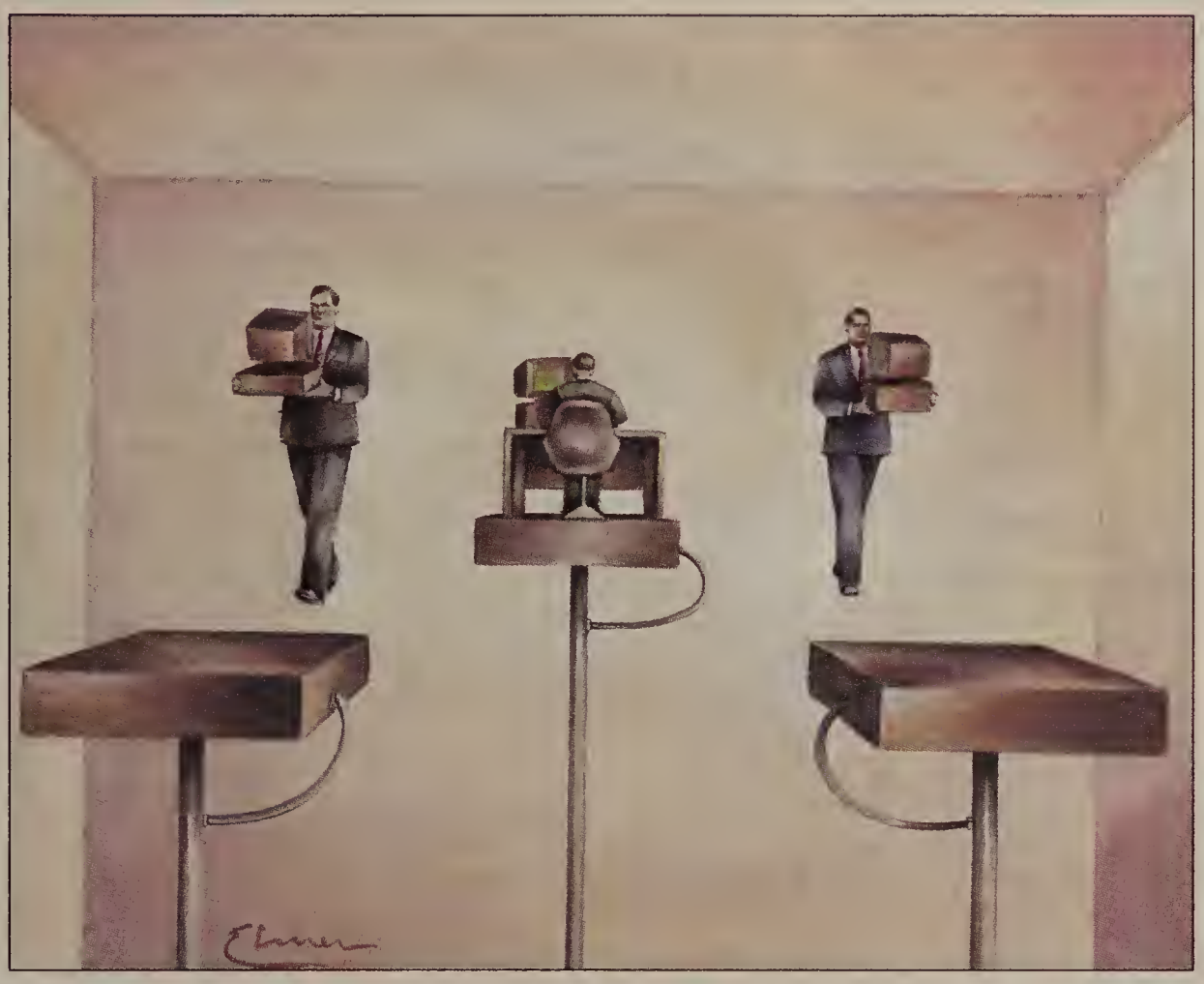
Finding a niche all its own



When wireless local-area networks made their debut, proponents claimed they would steal the spotlight from cabled LANs by obviating the need to invest in costly cabling systems.

Wired LANs would be replaced when end users found wireless technology enabled them to freely roam throughout the office with personal computers in tow instead of being anchored down to their desks by a cable connection.

It's now several years later, and few users have pulled the plug on wired LANs in favor of wireless technology. Companies that rely on wireless LANs exclusively are extremely rare, and those that do are somewhat nomadic in that they frequently move to new buildings. Wireless LANs enable these users to simply pick up and go, rather than incur rewiring costs at every stop.

A larger number of users are adopting wireless LANs as an adjunct to their wired LANs. In the last two years, wireless LANs have proven themselves in a variety of real-world applications ranging from factory floor and retail operations to temporary offices and hospitals. Wireless LANs can be set up quickly and used as a backup method when cable fails, allowing mobility and making them useful in such settings as warehouses.

But wireless LANs also have some disadvantages. For one thing, they require more of an initial capital equipment investment than wire-based LANs because adapter boards and transmission equipment are more expensive. For another, wireless LAN standards aren't as developed as the IEEE standards that specify the use of cables for Arcnet, Ethernet and token-ring nets. Finally, wireless leaves unanswered questions about health, safety and security.

For most users, the unique benefits of wireless LANs give them a specialized role in enterprise networks.

Wireless LANs typically consist of an adapter board — which resides in PCs, printers, servers and other LAN devices — software and an external device that transmits data using radio or infrared light.

Wireless LANs can be interconnected with wired LANs. To do this, net managers simply equip PCs with both an adapter board for the wired LAN, such as an Ethernet board, and a wireless LAN board. Then, as traffic from the wireless LAN comes in, it is shuttled across the PC's bus to the Ethernet board and onto the cable.

Radio-based LANs have the advantage of being able to operate throughout a building. They can broadcast Ethernet and token-ring transmissions over the airwaves but not as fast as Ethernet and token-ring signals can be carried across wires.

Infrared technology, on the other hand, uses pulses of light to transmit data at the same speed that wiring can carry Ethernet and token-ring signals. But infrared signals can't be transmitted between floors or through walls (see "Competing wireless technologies," page 48).

The FCC Part 15 rules allow unlicensed operation of spread-spectrum radio devices in 3 frequency bands:

- ***902-928 MHz***
- ***2.4-2.5 GHz***
- ***5.8-5.9 GHz***

Transmitter power is limited to 1 watt or less.

Mobility is key

Analysts say wireless LANs are proving themselves in applications where their mobility offers an important benefit.

"[Wireless LAN] installations to date have not been justified purely by economics," says Maurice Klapfish, an analyst with the Venture Development Corp. in Natick, Mass. "They have been justified by mobility. I just don't think at this point they are cheaper [than a wired LAN]."

According to Klapfish, there must be other motivating factors for users to buy a wireless LAN, such as a large amount of movement or the need to support a temporary application.

According to Alex Alavi, marketing manager for Motorola, Inc.'s Altair Product Operations, users shouldn't install wireless simply because they want to replace their existing cable LAN. "You certainly don't want to use wireless to replace a complete infrastructure," Alavi says. "Once you install wiring, the investment is sunk. But if you think you are going to be moving, you want to think about wireless right off the bat."

Wireless LANs now account for less than 0.5% of the 13 million installed LAN connections, according to BIS Strategic Decisions of Norwell, Mass. But BIS expects that by 1997, wireless LANs will account for 17% of all LAN shipments and revenue should exceed $300 million.

For example, at Grey Advertising, Inc. in New York, office automation coordinator Mike Whitley has been

(continued on page 48)

By JEFFREY UBOIS

(continued from page 47)
using a wireless printer-sharing product called Local Area Wireless Network (LAWN) from O'Neill Communications, Inc. to support small work groups. "We work on projects, and moving people around is a frequent occurrence," Whitley says. "You're in an office one month and then you move. It was very expensive to rewire."

LAWN can transmit data 500 feet at speeds up to 19.2K bit/sec using a 20-milliwatt power output. An external box about the size of a Walkman acts as the transceiver and connects to users' computers via a serial port. LAWN operates in the 902-MHz to 928-MHz band.

According to Whitley, a LAWN device can be put in one corner of the building and transmit to a LAWN device in another corner, which can be as many as 12 floors away. "It just depends on what your building is made of. For example, we have an old building with metal plates in the walls that signals can't be transmitted through."

Grey Advertising doesn't do much with its LANs other than printer sharing, and for most work groups, Whitley still uses cable to connect printers with PCs. "We are 90% pleased with it," he says, but adds that the wireless network is much slower than cable for printing large graphics files.

For example, Whitley says printing times for graphics-intensive pages can soar to 30 minutes a page, compared to less than four minutes for direct serial or parallel connections.

Also, Grey Advertising experienced interference problems from a satellite network run by the Portuguese consulate on an adjoining floor. The consulate installed antieavesdropping and security devices that emit a low radio frequency, which interfered with LAWN. "We had to get rid of the LAWN devices in that area of the building," Whitley says. The consulate was given preference to continue broadcasting over the ad agency under international law.

On the factory floor

Wireless LANs also make sense for applications where cable is hard to run. Dan Stuart, a telecommunications specialist in the engineering department of McDonnell Douglas Space Systems Co. in Huntington Beach, Calif. is using WinData, Inc.'s FreePort to connect Digital Equipment Corp. workstations on the factory floor to the company's network, which is a multiprotocol, campuswide Ethernet supporting 7,500 users. The cost for FreePort is about $1,000 per node. McDonnell Douglas is using wireless on the factory floor so it doesn't have to pull cable throughout the factory.

FreePort uses spread-spectrum radio, is compatible with Ethernet networks, offers throughput of up to about 5.7M bit/sec and works with hubs that support 32 or 64 users up to 80 meters away. Transceivers send data to the hub at 2.44 GHz, and the hub broadcasts at 5.78 GHz.

"It's clear that on our factory floor, wireless was the most cost-effective option," Stuart says. "We found the only other alternative would have been to use fiber optics at a cost of $125,000, as compared to about $30,000 for the wireless setup."

As at Grey Advertising, being able to set up work groups quickly was one of the prime considerations in selecting a wireless technology. FreePort is easy to install because all the end user needs to do is plug the board into the PC and turn it on. With cable, technicians need to check the cable for breaks and make sure signals are being carried across it before it can be put into use.

But Stuart says that the network also has to support high-speed X Window System applications and connect to the company's Ethernet network. Stuart says the wireless LAN had to meet three major criteria: It had to be protocol independent, support IEEE 802.3 and support a variety of data terminal equipment such as workstations.

Stuart says using wireless technology also allows him to preserve network investments. "If a group's job goes away, I pick up the toys and go home, but I can't pick up old wire and go anywhere."

Wireless makes light work

Competitive costs, ease of installation and compatibility with the company's existing token-ring network were the main reasons Nick Blazensky, manager of the site design unit of the telecommunications division at The Travelers Corp., selected an InfraLAN Technologies, Inc. InfraLAN. Blazensky says The Travelers is using InfraLAN as an interim solution for areas where cable will be installed later and for temporary setups.

InfraLAN is fully token-ring compatible and operates at speeds up to 4M bit/sec, with a 16M bit/sec option expected very soon. It uses infrared light, rather than radio, to transmit data.

Blazensky says the amortization cost for the equipment and installation of the wireless LAN over five years is about $8.35 per month, compared to $30 to $50 per month for wired installations, assuming a cost of $325 to $500 for wiring and a move every 12 to 24 months. "It costs about $500 per station, and it is a reusable resource, whereas cable is usually abandoned," he says. Since January 1990, Blazensky has installed about 50 nodes.

The InfraLAN is totally transparent to the rest of The Travelers' token-ring network, Blazensky says. "In the case of infrared, we are beyond the experimental stage," Blazensky says. "We'd like to see a version that can transmit up to 1 kilometer and to see FDDI-like speeds of 100M bit/sec. We have been led to believe that is very doable."

For other users, wireless LANs provide reliability unmatched by traditional cabling systems. Joe Potocny, information systems (IS) specialist for the City of Mission Viejo, Calif., replaced his cabling with Motorola's Altair wireless LAN. Potocny says that the wired LAN experienced six to eight hours per month of downtime due to problems such as cable breaks, but the wireless LAN has not gone down at all since it was installed last year. Currently,

Competing wireless technologies

Wireless LANs use many different transmission technologies, but one of the most basic divisions is between those that use infrared light and those that use radio transmission.

Infrared systems, such as those from Photonics Corp. in Campbell, Calif., and InfraLAN Technologies, Inc. in Auburn, Mass., use infrared light to transmit data, much like television remote controls.

Using either laser diodes or LEDs, infrared local-area networks now offer the highest speeds of all wireless LANs, with 16M bit/sec token-ring products commercially available and work under way to create Fiber Distributed Data Interface-like systems running at 100M bit/sec.

Infrared systems also have the advantage of putting safety concerns to rest, but for a price. So far, they operate only on a line-of-sight basis; there's no going through floors and walls or around corners. They will, however, reflect off flat surfaces, making it possible to get around some obstacles. But if used to connect two buildings, the infrared signal is adversely affected by bad weather.

Radio-based systems come in two flavors: conventional systems and spread spectrum.

Conventional radio, also called narrowband, uses a single dedicated channel for transmission. Conventional is a more mature technology than spread spectrum and has a simpler design.

However, operating wireless networks that use conventional radio can require getting a license from the Federal Communications Commission. For example, Motorola, Inc.'s Altair is a conventional radio system operating in the 18- to 19-GHz microwave radio band and requiring a license from the FCC.

"Because of the high frequencies involved, Altair systems cover an area of about 5,000 square feet in the typical office environment, with signal strength dropping off rapidly beyond this," says Alan Zabarsky, general manager for the company's Altair product operations. "This means that within any one geographical area, many Altair systems could operate on the same frequency — even within the same high-rise building, for example — without interfering with one another."

Spread-spectrum systems, such as NCR Corp.'s WaveLAN and Windata, Inc.'s FreePort, send transmissions over multiple frequencies simultaneously. There are two ways to create a spread-spectrum signal.

One method, called frequency hopping, involves a radio transmitter that can electronically tune into one frequency, pause and transmit at that frequency for a very short time (usually measured in milliseconds), then jump to another frequency and repeat the process. Picking up the signal requires a receiver that matches the transmitter's hop sequence both in frequency and time.

With the second technique, direct sequence coding — also known as code-division multiplexing — data is modulated using a binary code known as the chipping code.

The chipping code spreads the signal across frequencies in direct proportion to the number of chips used. Therefore, a 10-bit chipping code spreads the signal across a frequency range that is 10 times greater than a single-bit chipping code.

Most spread-spectrum wireless LANs on the market use direct sequence coding. Both data and the chipping code are transmitted at the same time, enabling receivers to pluck the proper data from the air.

Spread-spectrum systems are more immune to multipath interference caused by signal reflections within a building and outside interference caused by other radio devices, such as microwave towers. They are also free of FCC licensing requirements.

"In the long run, we will see more migration away from conventional radio to spread spectrum," says Ira Brodsky, president of Datacomm Research Co. in Wilmette, Ill.

"The FCC is not only looking to allocate frequencies for new technologies, but at possible changes in old allocations," Brodsky says. "Spread spectrum is one of several new technologies many people are hopeful will provide more efficient, interference-free operation and higher user capacity."

— Jeff Ubois

Lighting up the LAN

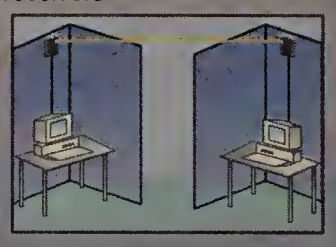
Benefits and drawbacks of infrared technology

Benefits:

- Can match speed of wired LANs
- Uses lasers or LEDs to transmit data via infrared light beams
- Emits little radiation

Drawbacks:

- Requires line-of-sight between transmitters/receivers
- Signals transmitted outside are susceptible to adverse weather



GRAPHICS BY SUSAN SLATER

Broadcasting LAN data

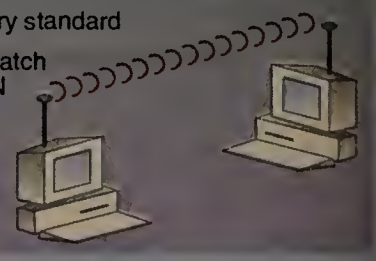
Benefits and drawbacks of radio technology

Benefits:

- Line-of-sight between transmitters/receivers not required
- May not require FCC license
- Can broadcast signals using spread spectrum to avoid interference

Drawbacks:

- Emits high-frequency microwave radiation
- No industry standard
- Cannot match wired LAN speeds



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the network is used to run administrative applications for 69 users and has 91 nodes spread over a 25,000- to 30,000-sq.-ft. area.

Altair broke new ground with its use of spectrum in the 18- to 19-GHz range. Useful for communications within and between buildings, it has a transmission range of about 500 feet and a maximum throughput of 3.5M bit/sec, though it is fully compatible with 10M bit/sec Ethernet. Altair plugs into an Ethernet adapter and consists of a box about the size of a large three-ring binder as well as a smaller antenna module.

While reliability is the reason for sticking with wireless in the future, Potocny says that cost and the prospect of moving to a new building are the factors that led to the decision to buy a wireless LAN in the first place. He says the cost of installing a 10Base-T LAN in the current city hall was roughly equivalent to the cost of buying the wireless LAN he has now.

But the final kicker was an upcoming move.

"Eventually, we are going to get a new city hall, and when we move, all this investment will go with us," Potocny says. He has no plans to install cable after the move and expects to continue using only wireless when they move to the new building.

Potocny adds that rapid setup times have been an unexpected benefit. "The first night we had it, we set up 20 or 25 nodes within an hour and a half," he says. "There is no way you could do that with cable. The wireless LAN has also proven more flexible than the old cabling system. Now it takes five minutes to add a new user."

The downside

Despite some of the obvious benefits of wireless networks, there are also some significant problems, including safety, security, standards, performance and spectrum allocation.

The effect of radiation from wireless LANs remains uncertain. While the risks from infrared-based products are considered minimal, radio-based systems do emit high-frequency microwave radiation. While it's not the same as having a microwave oven with no door on it and power levels tend to be far lower than cellular phones, it is something users think about.

"I looked into health issues, and I checked for lawsuits about it," Potocny says, "but I didn't find any."

Ira Brodsky, president of Datacomm Research Co. in Wilmette, Ill., agrees that the issue is up in the air.

"We don't know enough to say with absolute certainty that there aren't risks, but the real problem is perception," he says. "People worry about it, and, therefore, it has to be addressed."

It may be that lawyers and bureaucrats, rather than engineers, will drive the future of wireless LANs. Through decisions concerning spectrum allocation, power level outputs, interference, and health and safety, the Federal Communications Commission is in a position to determine the winners and losers in the wireless game.

Security is an issue for many users as well, but the consensus among analysts and manufacturers is that it is less of a problem than commonly believed.

"Again, security is a big perceptual problem," Brodsky says. Depending on whether infrared or radio technology is used, tapping a wireless LAN may be more difficult than tapping a cable, he says. "The risk of unauthorized access is very low, though neither wireless nor wire is fully bullet proof."

Manufacturers are moving to address any security problems with encryption schemes, such as NCR Corp.'s Data Encryption Standard encryption option for its WaveLAN product.

In fact, one of the primary technologies used for wireless — spread spectrum — was originally developed during World War II to prevent jamming and interception. Spread-spectrum systems send signals using one of two techniques — frequency hopping or direct sequence coding.

The two techniques

With frequency hopping a series of frequencies are used for transmission. A transmitter sends data on one frequency for a very short time, then jumps to another frequency and repeats the process. The receiver tunes to those frequencies in sequence to receive the data. With direct sequence coding, data is broadcast across a range of frequencies according to a predetermined code.

Another hindrance to wireless LANs is in the standards arena. Though several products now offer seamless connections to wire-based networks, well-established wireless LAN standards have yet to evolve. That's partly because the FCC hasn't finalized the rules pertaining to use of radio spectrum for wireless LANs. The FCC needs to decide if and how it's going to reallocate spectrum, as well as come up with a pro-

(continued on page 61)

Bernard F. Curran
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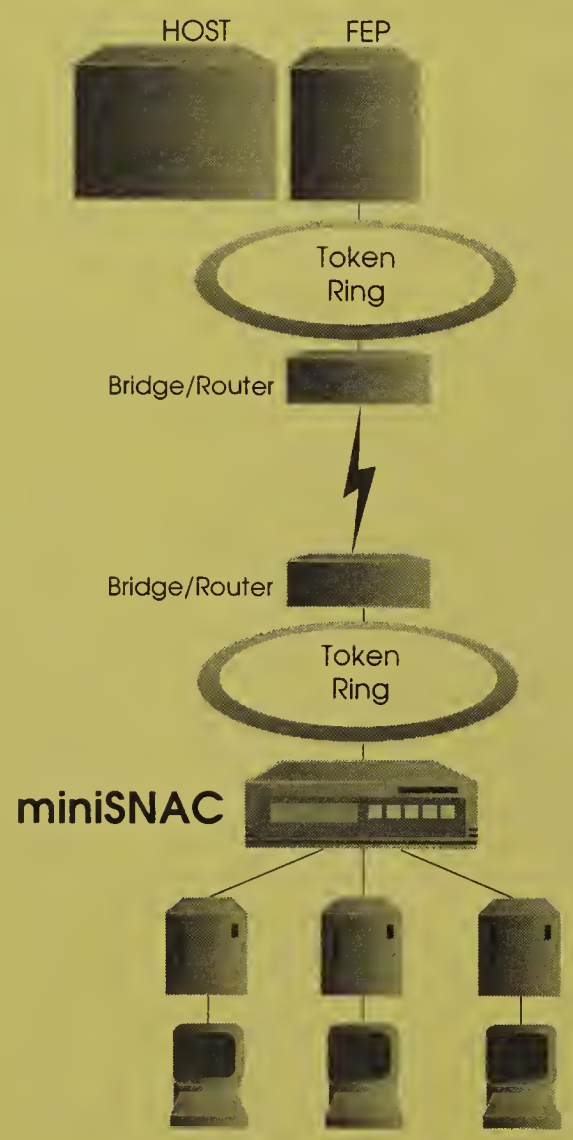

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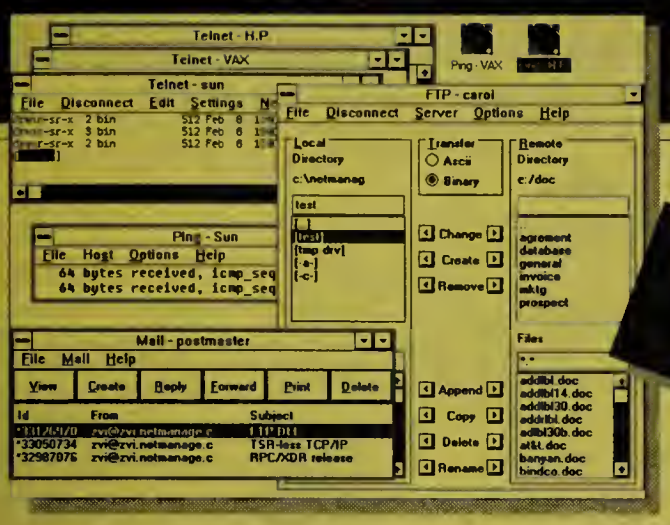

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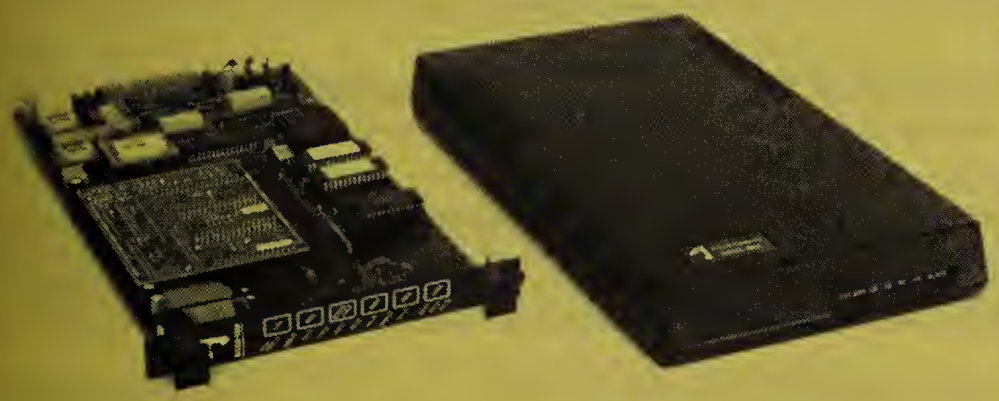

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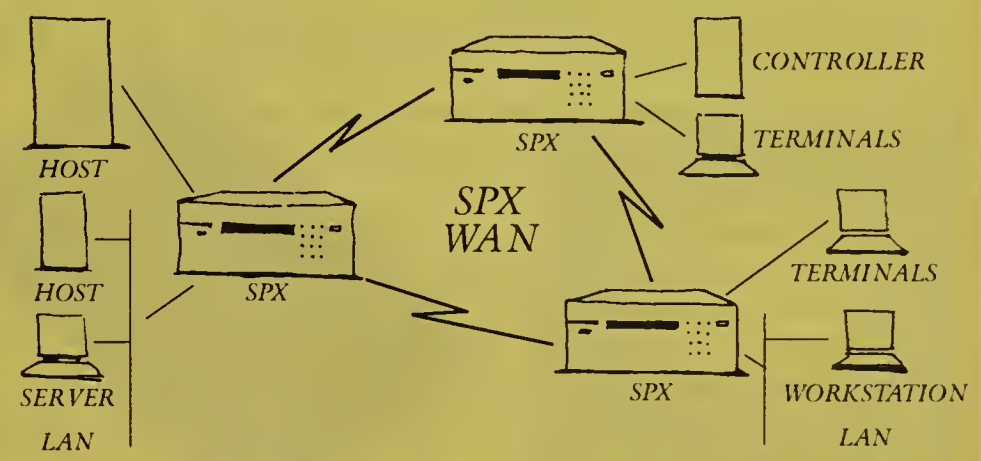

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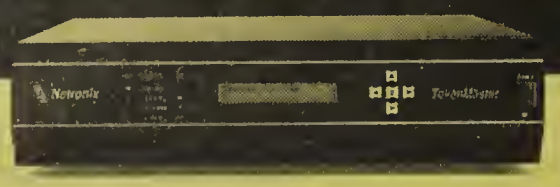

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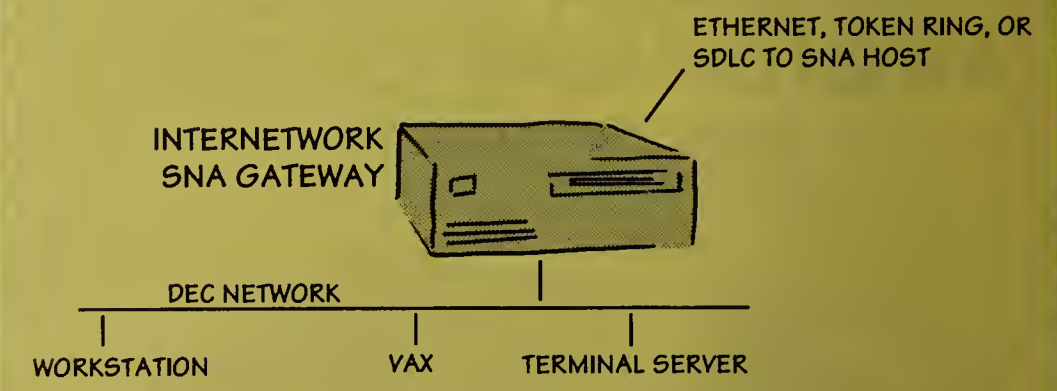

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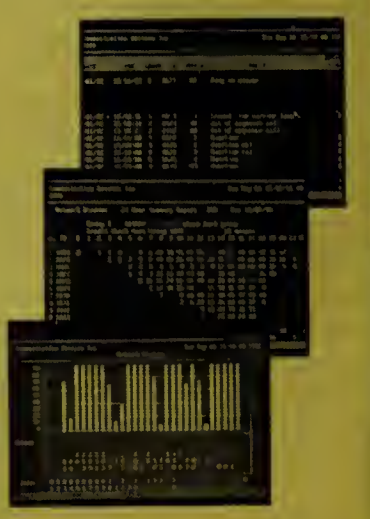

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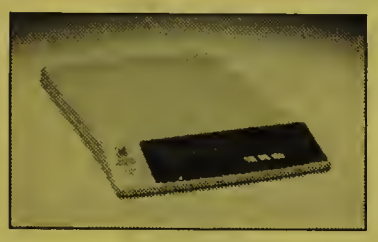

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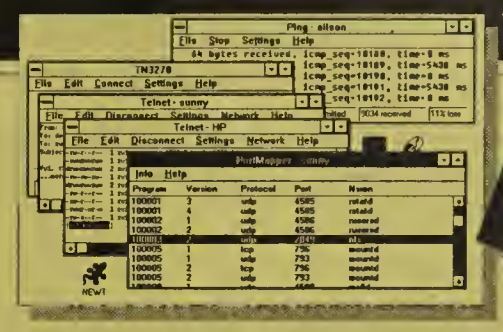

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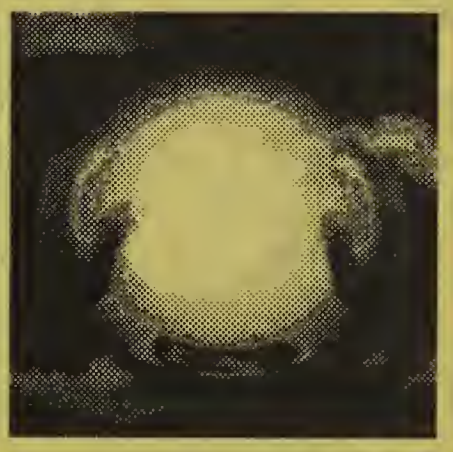

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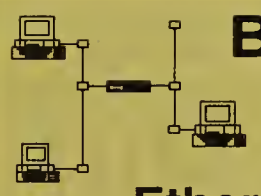

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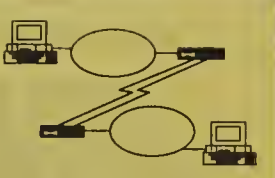

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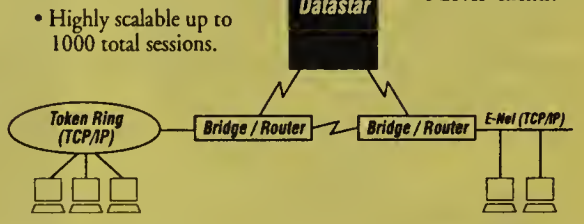

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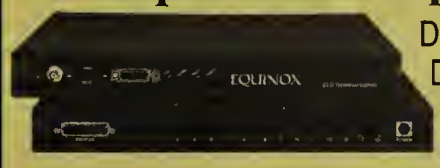

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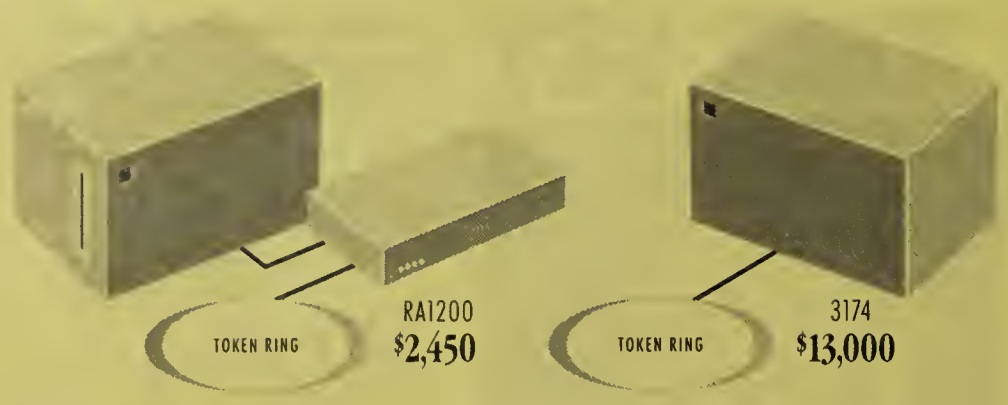

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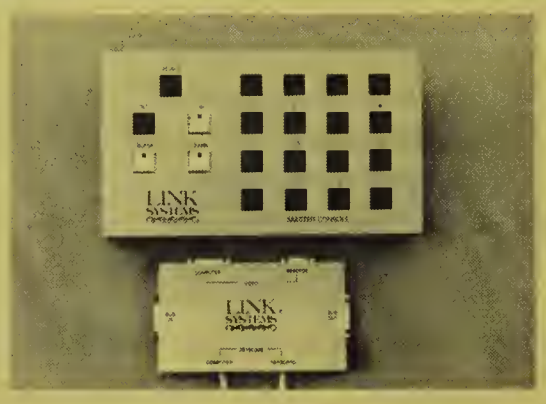

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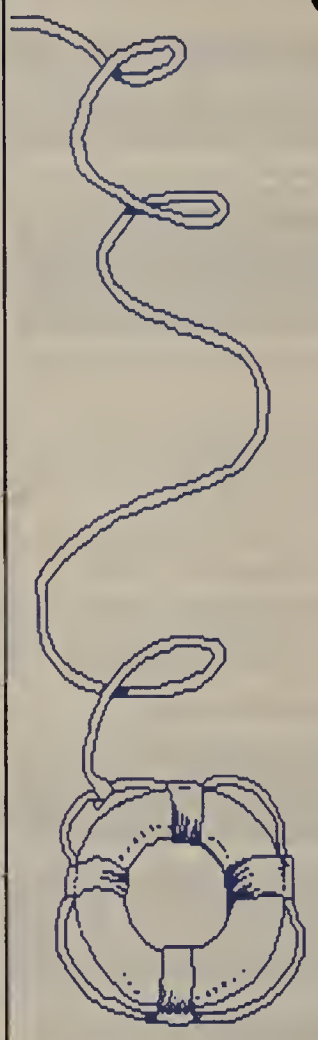

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Windows for Workgroups out

continued from page 2

based application rather than an operating system, primarily because it requires both MS-DOS and Microsoft Windows to be loaded on the user's personal computer.

Windows for Workgroups is really several applications in one. For example, it includes a version of Microsoft Mail for mail exchange with other Microsoft Mail users, and Microsoft Mail Extensions to let users exchange electronic mail with users of other mail packages.

It also includes Schedule+, a graphical scheduling application to let users within a specific group more easily coordinate meetings and manage daily calendars.

Like a network operating system, Windows for Workgroups also provides for Dynamic Data Exchange, ensuring that information updated in one place is automatically updated throughout the network. And built-in password security helps restrict access to shared resources and files when necessary.

According to Microsoft, there is no limit to the number of users that can be running Windows for Workgroups and sharing information. That number will be determined by the amount of traffic and E-mail usage on the network. For example, if the network supports heavy E-mail use, Microsoft recommends not more than 50 users, but that number can go up to 150 if E-mail use is light.

Positioning

Microsoft is targeting Windows for Workgroups at two distinct markets: small businesses with less than 50 users that do not need sophisticated networks, and departments within larger organizations that want to share local files and printers.

In the small-business area, Microsoft will compete with existing peer-to-peer networking vendors such as Artisoft, Inc. But according to analysts, it is not likely to supplant market leaders.

For one, the investment is not minor. Users need both DOS and Windows before buying Windows for Workgroups. And in order to get the peer capabilities, the product has to be running on an Intel Corp. 386SX or more powerful machine. Typical users looking to network for the first time are not likely to have high-end machines on every desk.

Furthermore, the product can not accommodate mixed operating system environments, whereas peer-to-peer net products from other vendors work with most operating systems (see "Microsoft marches into peer net market," page 17).

Within the larger corporate environment, Microsoft is positioning Windows for Workgroups more as a work group application, such as Lotus Development Corp.'s Notes, rather than a full-fledged net operating system.

In Microsoft's scenario, customers will use its LAN Manager as the network operating system, Windows NT as the server operating system, and Windows for Workgroups on the individual PCs providing them with peer-to-peer capabilities, in addition to server-based file, print and mail capabilities.

The new product is compatible not only with Microsoft's own LAN Manager network operating system, but also with Novell, Inc.'s NetWare and Banyan Systems, Inc.'s VINES. Users on NetWare LANs, for example, will be able to use Windows for Workgroups to share files on one another's hard drives without involving the server.

However, according to analysts, Windows for Workgroups suffers the same problems as many other peer-to-peer products. For one, turning machines off limits the resources that can be shared and can cause problems if a user is in the middle of a task.

"No one should think this will become a simple building block on which you can build an entire enterprise network," Aberdeen Group's Kastner said.

Windows for Workgroups is available now. Prices range from $99.95, which includes the software necessary to upgrade a current Windows environment, to $849.95, which includes all the software and hardware necessary to set up a two-PC system.

Lotus joins VIM, MAPI mail APIs

continued from page 4

soft's messaging subsystem interface is available.

Lotus will make the software available following the release of the extended MAPI specification, which is expected early next year.

X.400 compliance

In the announcement, Lotus also said it will ensure compliance with specifications to be released by the X.400 Application Program Interface Association (XAPIA).

Recently, XAPIA proposed certain standard elements defining how to develop basic mail-enabled applications. Lotus endorsed this initial specification and will ensure forward compatibility with specifications endorsed by XAPIA in the future.

Cisco details ATM plan

continued from page 2

completed, Cisco teamed with data service unit (DSU) vendor ADC Kentrox to jointly develop ATM-like functions in the form of a Switched Multimegabit Data Service (SMDS) interface.

In this phase, the router and DSU split the processing tasks defined by the SMDS Interface Protocol. The router encapsulates packets into SMDS frames and then hands the data off to the DSU, which segments the packets into 53-byte cells and passes them on to an SMDS net.

The router and DSU communicate via the SMDS Data Exchange Interface that has been specified by the SMDS Interest Group. It operates at up to 45M bit/sec and is available now.

In Phase 2, which is expected to be rolled out by early next year, Cisco will replace the SMDS DSU with a true ATM DSU. The Cisco router will communicate with the DSU via a High Speed Serial Interface link at T-3 speeds, and the DSU, in turn, will form the ATM cells. The interface will adhere to the data transfer and management standards set forth by the ATM Forum.

This strategy closely mirrors that of Cisco rival Wellfleet Communications, Inc., which last week announced that its routers will also work with the Digital Link Corp. ATM DSU ("Wellfleet, Cabletron reveal ATM strategies," *NW,* Oct. 26).

In Phase 3, scheduled for early 1994, Cisco will move ATM cell processing inside the router, obviating the need for the DSU and enabling the router to connect via ATM links to locally attached devices or wide-area switches at speeds up to 155M bit/sec.

Larry Lang, Cisco's ATM product manager, said the ATM interface will be developed to support different physical media, such as multimode fiber, Synchronous Optical Network on single-mode fiber and, possibly, twisted pair.

In addition, by the end of the third phase, Cisco expects to support all signaling methods such as permanent and switched virtual circuits, encapsulation techniques and other standards defined by the ATM Forum. Cisco said it doesn't plan to develop an ATM switch for ATM work groups and campus backbones.

Also at INTEROP last week, Cabletron Systems, Inc. announced a new router module, based on Cisco technology, for its family of Multi Media Access Center (MMAC) hubs. Dubbed the CRMIM-3, the module will support routing between any mix of token-ring and Ethernet local-area networks attached to an MMAC hub.

The four-port module will take up two slots in the three-, five- or eight-slot MMAC and support one 4M or 16M bit/sec token-ring port, one 10Base-T Ethernet port and two wide-area network serial connections. WAN ports operate at up to 4M bit/sec and support X.25, frame relay and SMDS via serial interfaces including V.35, X.21, RS-232 and RS-449.

The CRMIM-3 will be available in the fourth quarter of 1993. Pricing has not been set.

Staff writer Skip MacAskill contributed to this story.

Finding a niche all its own

continued from page 49

cess for awarding pioneer's preference licenses, which give companies the right to test new technology without having to publish trade secrets.

"The FCC's part of the mess hasn't been cleared up," says Jonathon Cheah, a senior principal engineer at Hughes Network Systems, Inc. in San Diego and editor of the IEEE proposed 802.11 standard for wireless networks. "The whole situation is very unclear."

The 802.11 specification will include standards for physical and media access control (MAC) layers of the seven-layer Open Systems Interconnection model. It will likely not specify the use of Ethernet or token ring at the data-link layer, but 802.11-based products should be able to pass information from the MAC layer to the data-link layer specified in 802.3 Ethernet and 802.5 token-ring standards.

Cheah says the IEEE won't complete its 802.11 standard for wireless networks before the end of next year, but that once standard chipsets are developed by manufacturers, costs are certain to fall. "We need the silicon guys to start the ball rolling, but they won't until they know there is a standard people will go by," he says. "When the standard is finalized, the cost of devices will drop tremendously."

The lack of standards also means that wireless networks made by different manufacturers often interfere with each others' operation. Solutions from a single vendor are, therefore, likely to be the norm for a few years.

The future

Three developments could further advance the cause of wireless LANs later this decade — bridging, data capture in retail and warehouse IS, and the emergence of palmtop or notebook computers.

Wireless bridges can be used to connect diverse types of networks throughout a building, factory or campus and to bypass phone lines. "A lot of companies are working on bridging applications between different types of LANs," Datacomm Research's Brodsky says. Some vendors have already accomplished this, but others will be getting involved in the future.

Wireless can also be used to connect LANs in different facilities. "To interconnect LANs, you can go to the phone company and get a T-1 link at 1.5M bit/sec, or you can buy a wireless LAN, pay for it once and run it at 3M bit/sec with no recurring monthly fees," Brodsky says.

Large retailers, such as Kmart Corp. and Wal-Mart Stores, Inc., are using wireless LANs to connect inventory control and point-of-sale systems with corporate information networks. Employees walk the aisles of the store with a handheld data-entry terminal or bar code wand and scan the bar codes of articles on the shelves. The handheld device then transmits a signal to an in-store computer that has access to the corporate WAN.

Brodsky says that retail and warehouse IS will account for $215 million of the total $260 million marketplace for wireless local-area data communications products in 1992.

Finally, wireless vendors are looking to piggyback on the move to portable computing. Brodsky sees a use in the future for a portable PC that has both an interface for wireless, for use when inside corporate headquarters, and a second interface for a personal communications service, for use when traveling.

"Information appliances and wireless phones are really going to drive the use of wireless data," Brodsky contends. "I envision a new generation of products and applications. What we are really talking about is establishing new business standards for interactions and access to data."

"As long as we look at wireless LANs simply as a replacement for wire or as just a new medium for old applications, their success is going to be very limited," Brodsky says. "Mobile data communications is a unique benefit of wireless technology, and the more timely access to information that wireless enables is going to drive the market."

Ubois is a free-lance writer from the Washington, D.C. area.

Carriers, IBM deliver plans

continued from page 1

Unisource will first install at least one TP4900 switch in London, Amsterdam, Frankfurt, Brussels, Belgium, and Gothenburg, the Netherlands. It will then link them with high-speed leased lines to form a transcontinental frame relay network.

It will later add switches in France, Norway, Finland, Italy, Spain and Switzerland. This will give Unisource the strongest European coverage of any frame relay net provider, including BT, AT&T, Sprint, Cable & Wireless Communications, Inc. and Infonet Services Corp.

Leigh Saunders, director of strategic services for Sprint International, said Sprint will link its domestic frame relay network with the Unisource network in London once the latter is completed. Because Unisource and Sprint use the same switch, customers of either carrier will be able to communicate easily with sites served by the other's frame relay network.

If the nets are linked soon, it could give Sprint a leg up on rivals including BT, currently the carrier to be beat in terms of international frame relay ("BT claiming lead in frame relay arena," *NW*, Oct. 26).

While there is much focus on international frame relay, other carriers are planning to widely deploy public frame relay within their own territories.

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Attendees crowd the floor at last week's INTEROP show.

lay to users in the metropolitan areas of San Francisco, Los Angeles, San Diego and Sacramento, Calif., a move that will make the service available to more than 85% of all businesses in the state.

The local telephone company will offer port-access speeds and committed information rate (CIR) speeds ranging from 56K/64K bit/sec to 1.544M bit/sec. Simone said this would include some — but not all — fractional T-1 speeds.

In a separate announcement, WilTel unveiled a series of new value-added network offerings and a service satisfaction guarantee for its frame relay service.

As part of its value-added network offerings, which will be available in the first quarter of 1993, WilTel will either lease or sell Cisco Systems, Inc. and Wellfleet Communications, Inc. routers, said Christine Heckart, broadband services product manager for WilTel.

The carrier will remotely configure the routers to support frame relay and will also work with customers to outline a net implementation plan, which includes tests of individual components or the entire internet. WilTel will offer varying degrees of management and maintenance.

WilTel will serve as a single point of contact for trouble resolution, Heckart said, and will provide frame relay performance reports that contain the average level of permanent virtual circuit (PVC) use as a percentage of the user's CIR and peak PVC use by hour, day or week.

The carrier also claimed an industry first with its WilPak Service Satisfaction Warranty, under which new WilPak users can cancel the public frame relay service within 120 days of start-up without paying installation charges.

The limited warranty lets WilTel's WilPak public frame relay users switch from that service to whichever WilTel service it used previously without paying interexchange or local access installation charges.

If the user's original service was provided by another carrier, WilTel will switch the customer back to that carrier within 10 business days of cancellation and pay the user a specified switchback reimbursement.

IBM is committed

On the frame relay equipment side, IBM last week made its strongest statement to date, announcing at a meeting of the Frame Relay Forum here that it will be adding frame relay support to a number of its products by the end of 1993.

Ellen Hancock, general manager of IBM's Networking Systems division, said IBM will add frame relay support to its Application System/400 minicomputers, RISC System/6000 workstations and Personal System/2 personal computers in the next 18 months. The upgrades will be accomplished via software enhancements, she said.

IBM previously announced frame relay support on its 3745 front-end processors and PS/2-based RouteXpander/2, she said.

"IBM is committed to frame relay, and our architectures — SNA and APPN — are marvelous fits for it," Hancock said. "In the world of multiprotocol routing, frame relay is becoming increasingly important."

Senior Editor Bob Brown contributed to this story.

Frame relay picks up steam

Slew of announcements emerge at INTEROP

- **Unisource Business Networks** of Frankfurt, Germany, announces plans to build a pan-European frame relay network based on Sprint Corp. TP4900 cell relay switches. It will link the network with Sprint's U.S. frame relay network.
- **Pacific Bell** details plans to offer frame relay over Newbridge Networks, Inc. switches to 85% of all California businesses starting in mid-1993.
- **Sprint and Pacific Bell** complete their frame relay network interconnection trial, calling it a success.
- **WilTel** announces frame relay network support services and the industry's first limited warranty.
- **IBM** pledges to add frame relay support to its AS/400, RS/6000 and PS/2 machines.

GRAPHIC BY TERRI MITCHELL — SOURCE: NETWORK WORLD

Vendors seek SNMP mgmt.

continued from page 1

on Network Systems, Inc., SunConnect and Systems Strategies, Inc.

The proposed Simple Network Management Protocol MIB would enable users to monitor and perhaps control all their SNA gateways from a centralized SNMP-based management system such as Hewlett-Packard Co.'s OpenView or SunConnect's SunNet Manager, said Kevin Tolly, president of Interlab, a Sea Girt, N.J.-based consultancy. Tolly's company is acting as an independent coordinator for the MIB definition effort.

Today, host-based management systems, such as NetView, can tell only whether a given physical or logical unit associated with a gateway is active, he said. It provides no performance information, such as how often each physical and logical unit uses the gateway and how much data each transmits.

The SNMP MIB also would likely support remote configuration of the devices, including the use of profiles, which make it easier to configure large numbers of gateways, Tolly said.

Joseph Beary, a network engineer who works with HP's internal data network in Rockville, Md., said management of the gateways in his net involves "running around to each node, rebooting it when it fails and praying that it stays up.

"The management of gateways today is horrendous, and I'd be very interested in an SNMP MIB for our gateways," Beary said. "SNMP today just ignores gateways, and for administrators who manage LANs, management must be done via SNMP or else it won't be managed."

The vendor group will present its MIB at the Internet Engineering Task Force (IETF) meeting later this month in Washington, D.C. and issue a request for comment for formal evaluation.

Further MIB extensions could eventually be created to accommodate SNA devices other than gateways, Tolly said.

"Once you define SNA attributes such as PU types and other parameters of PU and LU devices, then it's no longer device-specific and could, theoretically, be carried over to any other SNA device," he said.

Rick McGee, director of architecture and telecommunications for IBM's Networking Systems group, said his company may commit to the initiative. IBM last week said it plans to publish its own MIB that supports management of Advanced Peer-to-Peer Networking devices via SNMP (see "IBM reveals new facets of APPN plan," page 1).

"What we've developed and what the [group] is currently developing are not the same, but they are similar," McGee said. "It appears that there will be an opportunity to explore how we can integrate our MIB with theirs."

An effort is also under way to define an SNMP MIB for managing devices that convert IBM Synchronous Data Link Control data to token-ring formats, such as Sync Research's SNA Network Access Controller/Token Ring Converter. Cabletron Systems, Inc. and Sync Research will present an SNMP MIB for managing such devices at the upcoming IETF meeting. According to Lynn Nye, Sync Research's director of product marketing, the MIB being developed with Cabletron could eventually be merged with the SNA gateway MIB.

Firms team to build link

continued from page 4

"Before, if LAN users wanted mainframe access, they had to set up a [personal computer] with NetWare for SAA, and then they had to set up a link to the mainframe through their existing controllers [and FEPs]," said Gerry Machi, vice-president and general manager of Novell's NetWare Systems Group, based in Sunnyvale, Calif. "As demands on the connection increased, the 3745 or 3174 controllers started causing bottleneck problems."

The 3172-BTI is built on a customized version of IBM's 3172 Model 3 Interconnect Controller, a box designed to connect LANs to mainframes. The customized version uses Bus-Tech's Micro Channel-to-Channel Adapter (MCCA) card and is preconfigured with the core NetWare Runtime operating system and NetWare for SAA, in addition to as many as four Ethernet or token-ring LAN cards. Loaded into the 3172-BTI, the MCCA card is directly connected to the mainframe using a bus-and-tag connection, supporting speeds of up to 4.5M bytes/sec. According to Machi, the 3172-BTI provides other benefits that might not be as obvious.

"Now, Oracle [Corp.] and Gupta [Technologies, Inc. databases] can communicate directly with [IBM's] DB2 on the mainframe," he said. "Anyone who'd built [a NetWare Loadable Module] now has a direct pipe into the mainframe."

IBM will provide installation and support for the new product, although Bus-Tech will be the sole marketing channel. The 3172-BTI will be available next month starting at $21,950.

IBM reveals new facets of APPN

continued from page 1

APPN strategy, analysts said, since APPN is supposed to provide faster, more dynamic wide-area routing than the Transmission Control Protocol/Internet Protocol. Without that support, the 6611 will offer the same wide-area functionality IBM's APPI counterparts are espousing and in nearly the same fashion.

Cisco Systems, Inc. spearheaded the formation of the APPI Forum in August to develop an alternative technology to IBM's APPN, which was designed for dynamic routing of Systems Network Architecture data without host intervention.

APPI supports APPN End Nodes, which are at the periphery of the network, but uses TCP/IP as the wide-area protocol of choice. Cisco also promises that APPI will be able to dynamically reroute sessions around failed links, something APPN cannot do, though IBM has promised to fix that problem.

APPI specifications will be made available at no cost. IBM is the sole APPN licensee and wants $400,000 for its Network Node software, the key to all APPN routing and directory functions.

In its current release, the 6611 supports SNA routing across TCP/IP nets via Data Link Switching (DLS). DLS lets the router acknowledge receipt of SNA frames from locally attached hosts and handle link-layer flow control for SNA sessions.

Even when the 6611 gets APPN Network Node support in the first quarter of 1993, it will still use DLS, not native APPN routing. That means it will be much like the APPI strategy.

It won't be until sometime in late 1993 or early 1994 that the 6611 will be able to route SNA data over APPN nets without having to encapsulate it in TCP/IP.

"When we ship the 6611 with APPN Network Node, it will at first use a TCP/IP connection to the WAN," acknowledged Jon Fjeld, product manager for network routing systems in IBM's Networking Systems group.

Users and analysts were split over whether this long wait for support of native APPN routing will hurt IBM's APPN strategy.

"We aren't [upset] by that because we don't see the value an APPN routing protocol would bring us," said Steve Simon, a telecommunications engineering project manager with The Travelers Corp. in Hartford, Conn. "When we have APPN on our host and in various workstations and other devices around our net, then we might need native APPN routing."

Anura Guruge, an independent networking consultant in New Ipswich, N.H., said IBM's APPN revelation was an interesting twist in light of what the APPI Forum wants to do.

"I would classify the lack of native APPN routing support an unexpected diversion along the way to true APPN routing," Guruge said.

IBM's first covenant is to protect its SNA installed base, which it will ultimately do, said Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J. "But IBM saw TCP/IP eating away at some SNA users and employed damage control by supporting it first in the 6611."

Two of the main drawbacks of APPN's acceptance are that the APPN specifications are controlled by IBM and the APPN Network Node specification is too expensive.

IBM countered those charges by announcing it will publish the central APPN routing schemes.

For example, IBM said it will deliver its DLS and APPN over TCP/IP Sockets technology specifications to the Internet Engineering Task Force by March 1993. Software developers would still have to license the specifications from IBM, analysts said.

IBM also announced it will make its Network Node specification documentation available for less than $1,000 in the first quarter of 1993. With this specification, third-party vendors can build their own APPN Network Node from scratch without paying IBM's $400,000 licensing fee.

"We don't recommend it because it will take vendors longer to bring APPN products to market and we think it will cost them five times the $400,000 amount to do it," said Rick McGee, IBM's director of architecture and telecommunications.

Third-party vendors are taking a wait-and-see approach to IBM's Network Node specification offer.

"It's a good first step, but we'd have to see how much work would be involved in building [Network Node] ourselves," said Raymond Chan, vice-president of business development for Network Software Associates, Inc., an IBM communications software developer in Laguna Hills, Calif. "The license fee is still an unresolved issue."

IBM also declined to join the APPI group last week.

"We don't think APPI is needed, and it adds extra expenses our customers don't need," McGee said. "We think what we are doing with native APPN routing is better, and it will be shipping before APPI is even defined."

Apple ties Mac into SNMP

continued from page 6

$3,000 for 200 users. A TCP/IP Administrator's Kit is priced at $199.

AppleTalk Connection and TCP/IP Connection for Macintosh will be available in the spring of 1993.

Also at INTEROP, Apple broadened its X.400 offerings with the introduction of MacX.400 SD, a low-end X.400 server product that provides networked Macintoshes with connection to a single X.400 network. At the high end, Apple offers the MacX.400 server software, which supports connections to as many as 50 Message Transfer Agents.

MacX.400 SD is currently shipping at $3,000. It can be upgraded to MacX.400 server for $2,000, which is the cost difference between the two products.

3Com adds to token-ring line

continued from page 2

2.6G bit/sec passive matrix bus, which can be configured to support as many as five managed 4M or 16M bit/sec token rings or 11 unmanaged token-ring work groups.

Future developments

Down the road, customers will be able to configure the multigigabit backplane to support as many as 17 dedicated 155M bit/sec ATM links. In addition, the hub has been designed to support an optional backplane that will handle high-speed switching. 3Com declined to provide time frames or details on these future offerings.

The MSH is positioned between 3Com's high-end LinkBuilder 3GH and mid-range LinkBuilder Ethernet Connect System (ECS). All ECS modules, except the ECS management and power supply modules, can be used in the MSH with a new ECS/MSH adapter.

3Com said it will ultimately upgrade the high-end 3GH with ATM and position it as a hub of hubs that supports MSH devices scattered throughout a company to support various types of LANs. The company declined to expand on the 3GH enhancements.

Token-ring modules announced for use with the MSH include 12-port multistation access units (MAU) and logic modules called RingBuilders used to control the MAUs.

Powered by homegrown application-specific integrated circuits (ASIC), RingBuilders are slot-independent and can support as many as nine MAU interface modules or a total of 108 end stations.

The MAUs, which support unshielded twisted-pair wire, can be logically moved from one ring to another or isolated from the backplane to act as independent 12-port hubs.

Ethernet modules

The company is also rolling out two new 10Base-T Ethernet modules for the MSH — a 12-port version that supports the emerging Secure Simple Network Management Protocol and a 13-port nonsecure model.

Although the MSH supports both token-ring and Ethernet LANs, data cannot be exchanged between the two networks within the hub. 3Com is exploring the idea of developing a bridge module for the device.

In order to manage these various LAN configurations, 3Com rolled out an MSH Management Module that runs 3Com's SmartAgent management software. The module polls RingBuilder and Ethernet modules that have on-board ASICs and SmartAgents.

"The management module is really a supervisor card that puts chunks of management on each smart card, pushing management further down into the network," Boyle said. "Each smart card monitors the traffic on it and compiles statistics. The management module then polls each card in the hub, thus reducing overall management traffic."

According to John McConnell, vice-president of Infonetics Research, Inc., a consultancy in San Jose, Calif., 3Com had to address the token-ring hub market because the industry itself is shifting in that direction.

"Our figures show that token ring is growing at a rapid pace," he said. "3Com had to fill that gap in their product line, and it complements their overall SNA strategy as well."

The LinkBuilder MSH, Management Module, RingBuilder Module and 12-port MAU will be available in the first quarter of 1993. The new Ethernet products, the 12- and 13-port modules and ECS/MSH adapter, will be available at the same time.

More modules are expected to be released in the second quarter of next year, including a 12-port shielded twisted-pair token-ring MAU, a 24-port twisted-pair Ethernet module, a six-port coaxial cable Ethernet module and a six-port fiber-optic module.

Although pricing has not yet been determined for the MSH and its various elements, 3Com said the cost of a typical configuration that includes token-ring and Ethernet cards will start at less than $200 per port.

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